Syngenta's Comments on the EPA's November 30, 2000 Draft "Atrazine: HED's Preliminary Human Health Risk Assessment (and Associated EPA Documents) for the Reregistration Eligibility Decision (RED).

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Executive Summary

Syngenta Crop Protection, Inc. received on Saturday, December 2, 2000 your letter of December 1 and a copy of the November 30 USEPA Preliminary Human Health Risk Assessment. As requested in your letter, this document and attachments comprises our formal response to the HED's Preliminary Human Health Risk Assessment and associated documents. Also, as requested in the December 1 letter, from EPA, Syngenta submitted a high level summary of our comments via an e-mail message on December 18, 2000. This summary, which has been revised, is contained in the next section of our comments. In the Attachments to the comments are included the following.

- Information clarifying agricultural practices and atrazine use.
- A presentation of time weighted data for the deterministic assessment.
- Probabilistic assessment for diet and water in higher exposure CWS.
- A position paper titled "Use of a 5% Factor Applied to the Application Rate for Assessment of Hand-to-Mouth Exposure to Turf Treated with Atrazine".
- A timeline for submissions for ongoing studies (Attachment 6)

Syngenta Crop Protection also received on Monday, December 11, 2000 the Preliminary Environmental Fate and Effects Risk Assessment in support of Reregistration (dated December 8, 2000). A 30-day response with a list of corrections and additional information will be provided as requested by January 9, 2001.

In the preliminary risk assessment conducted by the Agency, Syngenta disagrees with EPA's rationale on the following:

- Retaining the 10X uncertainty factor for extra sensitivity of infants and children.
- Utilizing a chronic toxicity endpoint (LH surge suppression) to characterize short and intermediate term exposure.
- Using a chronic toxicity endpoint developed for adults to characterize risks associated with exposure of infants and children.

- Requiring a separate multi-generation reproduction study using Diaminochlorotriazine (DACT), when Syngenta has already performed or is performing more relevant comparative studies on more relevant endpoints.

In the preliminary human health risk assessment, EPA has acknowledged that the deterministic risk assessment conducted on diet and water would be conservative. As part of these comments, Syngenta is providing a probabilistic assessment that characterizes the extent to which the deterministic methodology overstates theoretical risks arising from the aggregation of exposure to total chlorotriazines in diet and water. The primary area of concern for human health risk, noted in the EPA's preliminary risk assessment, is derived from atrazine residues found in a small number of CWS on surface water (25 CWS out of 27,485 CWS). These few CWS have seasonal means or annual average concentrations above the Agency's drinking water level of comparison for some sub-populations when using deterministic methodology. Syngenta is including in these comments, a probability based distributional analysis of the exposures from these CWS. Based on this analysis, it is concluded that the total chlorotriazine residues of atrazine in diet and drinking water do not pose a risk to individuals drinking water from the CWSs with the highest total chlorotriazine concentrations.

An additional area of theoretical risk, identified in the preliminary assessment, resulted from residential application and post application exposure to atrazine-treated turf. Syngenta has re-calculated the exposures for turf using toxicological endpoints and assumptions that Syngenta believes are most appropriate for each specific use scenario. This analysis demonstrates that acceptable margins of safety exist for all of the exposure scenarios that can reasonably be expected to occur.

Additionally, Syngenta would like to use this opportunity to reiterate recent requests to be provided certain referenced documents or information sources that EPA did not provide with the preliminary risk assessment. The requested documents are:

1. Attachment VIII, Review of Atrazine Incident Reports. This information was supposed to be part of the November 30, 2000 HED Preliminary Risk Assessment for the RED for atrazine, but was not enclosed with the other documents received by Syngenta.

2. D. Widawsky, 9/26/00, e-mail to Catherine Eiden: RE: atrazine usage on guava, macadamia nuts, corn, and sorghum. Cited on page 12 in the November 15, 2000 memorandum from Catherine Eiden for the Atrazine Anticipated Residues and Acute and Chronic Dietary Exposure Assessments. This should include data resources and the weighting process used to estimate usage.

3. American Association of Pest Control Operators (AAPCO) 1996-98 spray drift incident reports. This was cited on page 7 of the December 8, 2000 Atrazine RED Draft Environmental Fate and Effects Chapter.

4. Ecological Incident Information System database, 109 incidents listed for atrazine. This was cited on page 72 of the December 8, 2000 Atrazine RED Draft Environmental Fate and Effects Chapter.

5. Standard Operating Procedures (SOPs) for Residential Exposure Assessments (revised December 1999). Not located on the EPA web.

6. Quantitative Usage Analysis dated May 10, 1999 from BEAD (as cited in the OREB Chapter, page 27).

7. EPA review memorandum of January 2000 by Ruth Allen on five published epidemiology studies, in the OREB Chapter, pages 11 and 60.

8. Exposure SAC Policy #9 *"Standard Values for Daily Acres Treated in Agriculture*" revised June 23, 2000. Tables 3, 5, 6, 9, and 10, located on pages 65, 81, 92, 118, 119 respectively, of the OREB Chapter.

9. EPA draft memorandum, dated October 19, 2000 "*Exposure of Professional Lawn Care Workers During the Mixing, Loading and Application of Granular Turf Pesticides Utilizing a Surrogate Compound*". Tables 10 and 16b, located on pages 119 and 126 respectively, of the OREB Chapter.

10. Science Advisory Council for Exposure Memorandum # 003.1 "*Agricultural Transfer Coefficients*," revised - August 7, 2000. Tables 12, 13 and 14 located on pages 121, 122, and 123 respectively, of the OREB Chapter.

The following sections provide Syngenta's comments on EPA's preliminary findings and conclusions. We are providing these inputs to EPA in order to develop the most scientifically valid risk evaluation for atrazine.

A. Drinking Water (Deterministic)

- Aerobic soil half-life: The most appropriate mean aerobic soil metabolism half-life value is 61 days as reported by the Atrazine Ecological Risk Assessment Panel in their Expert Panel Report (final report to be submitted to EPA as part of the Syngenta response to the Preliminary Environmental Fate and Effects Risk Assessment) should be used in the preliminary risk assessment.

- Regression equations: Syngenta used a more robust set of water data, which included both raw and finished water, as opposed to finished water only, to more accurately develop seasonal regression equations to calculate total chloro residues from measured atrazine concentrations.

- Time weighted means: The preliminary risk assessment did not use estimates of annual and seasonal (3-month) means with the time-weighted process for the Community Water Systems (CWS) from the three databases used in the preliminary risk assessment. This results in an over

or under estimation of the total chloro-triazine CWS annual and seasonal means. The time-weighted procedure is required for the monitoring data in the Syngenta Voluntary Monitoring Program (referred to as VMS) and the Acetochlor Registration Partnership (ARP) databases due to the increased number of samples per year with a greater number of samples subsequent to the atrazine application period (May–July).

- Composite water database: The various databases (PLEX, ARP, VMS) should be combined prior to calculating seasonal and annual means. Time weighting rather than simple averaging results in a statistically stronger and more accurate data set for analysis of likely exposures.

- Exposure period: Since these data sets span several years, time weighted means covering the same exposure duration as that being assessed in each exposure scenario should be determined (i.e. a seasonal mean should not be compared to a DWLOC for chronic exposure).

- Chronic drinking water exposure: The number of CWS exceeding the EPA Office of Water proposed chronic DWLOC of infants (12.5 ppb) in Tables 10, 11, 13, 14 for annual and seasonal total chloro-triazine means should be reexamined with the proper time-weighted calculation of mean exposure for each time period. In addition, the total chloro-triazine period mean concentration for each of the CWS in the three databases should be incorporated into the assessment. The period mean exposure concentration (based on an average of annual means for the number of consecutive years monitored) is the most accurate estimation of chronic exposure to the eight population subgroups. These data should be included to better and more accurately evaluate the CWS exposure profile for each of the population subgroups chronic DWLOC values.

- Syngenta Rural Well Survey: The data from this rural well survey represent rare, worst case high-end exposure scenarios because these wells were selected based on previous detections of atrazine and/or are located in high atrazine use areas where ground water is hydrogeologically vulnerable. Thus, the Syngenta rural well data are generally not appropriate for a regional/national scale population-based exposure assessment, and these findings should only be used for local best management practice efforts to reduce exposures.

- Point source contamination: Eight wells (out of 1,505 wells sampled in the Syngenta Rural Well Survey) had atrazine concentrations exceeding the MCL of 3 µg/L. Based on follow-up investigations, point source contamination rather than labeled use contributed to the detection of relatively high atrazine concentrations in at least 3 of these wells.

- ARP data: Table 8-1 provided percentile values of atrazine in ground water based on an ARP Groundwater Monitoring Study for the period from May

1995 to March 1998. The numbers could not be verified for accuracy because Syngenta does not have access to the ARP groundwater data.

- National Alachlor Well Water Survey: Results from this survey (Holden and Graham et. al., Environ. Sci. Technol., Vol. 26, No. 5, 1992) indicate that the MCL exceedance frequency of atrazine in private, rural domestic wells was less than 0.1% which is more than 5 times lower than the results from the Syngenta Rural Well Study (i.e. 0.5%). Additional information on atrazine detection in rural non-community system wells in 21 major atrazine use states was included in the PLEX Update IV (Submitted to EPA in June 1998 MRID 44597601). The data indicated that atrazine was detected above 3.0 ppb in 0.15% of private rural wells (25 out of 16,382 rural wells) which is very similar to the results from the National Alachlor Well Water Survey. As noted above, the Syngenta rural well survey was not designed to be used for predictions of concentrations of atrazine in regions or sub-populations.

B. Occupational Mixer/Loader/Applicator

- Exposure scenarios: Several scenarios do not exist and should be deleted (pp. 15 &16 of the Occupational and Residential Exposure Assessment and Recommendations for the RED). These scenarios include (1c), (1e), (2c), 3, 6, 9, and 15. Syngenta will be providing a document that will describe the possible exposure scenarios more accurately than is depicted in this document.

- Aerial: Information from university experts indicate that this is a limited market, particularly in conifer forests and Christmas tree farms. Because of the nature of the terrain in these farms, helicopters must be used. With relatively small forestry sites and changing wind conditions, the practical range of treated acres per day is 150-350 acres, not the 1200 acres listed. Furthermore, applications take place in the course of a week, entailing only a short-term (and not intermediate-term) exposure. Only short-term risks should be calculated.

- Bulk fertilizer: "On-farm" preparation is not done. Fertilizer pre-mixing is done in automated large-scale blenders. In addition, the assumption that 960 tons of fertilizer is mixed and loaded is not correct. The actual amount is more likely to be 150 - 300 tons. Syngenta will be submitting a document that will more fully describe the treatment process, possible exposure scenarios, and risk calculations.

- Rights-of-way: Syngenta atrazine formulations are not used on rights-of-way areas (this use is not supported by Syngenta), but are used on roadsides. AAtrex products are used at a rate of 1 lb. a.i./acre for roadsides, and not 4 lbs. ai/acre rate as noted in the document.

- Flaggers: University experts and commercial applicators have verified that flaggers are no longer used. GPS is the method of choice to mark aerial application areas.

C. Occupational Post-Application

- A post-application exposure assessment is not required for fallow ground, roadsides, and conifer forests. Manual irrigating/moving of irrigation pipe and scouting are highly unlikely to occur in areas designated as fallow and roadsides (note rate should be 1 lb. a.i./A). Manual irrigation/moving of irrigation pipe does not occur in newly planted conifer forests; scouting in conifer forests is not a typical practice.

- The risk assessment for people staking, topping, training or harvesting Christmas trees should be removed since there would be no atrazine residues at this time (3 or 9 months after application).

- The risk assessments for transplanting, harvesting and hand weeding golf course turf and sod farms should be removed. Treatment with atrazine to control weed growth is not followed by weeding on the day of application.

D. Residential Handler

- Both the low-pressure hand wand and hose-end sprayer application scenarios should be deleted. Neither of these techniques are practical application methods for a 1/2 acre (21,780 ft^2) lawn.

- The central tendency, rather than the highest values, should be used for each data set.

- Only short-term risks need to be calculated. Intermediate-term risks are not likely.

E. Residential Re-Entry: Ingestion

- Sticky hand-to-mouth: This scenario has not been adequately peer reviewed and should not be included in any assessment until properly vetted and discussed and data availability and needs are understood. Nonetheless, in the interest of presenting a calculation of this type of scenario, the default 5% transfer rate should be replaced by the actual turf dislodgeable residue data for atrazine. A 3-fold increase in wet- versus dry-hand transfer should be used until more relevant data are developed for this scenario in turf.

- Granule ingestion: There are no granular atrazine alone products, but only atrazine-treated fertilizer. Along with its small particle size, fertilizer may be caustic and is highly unlikely to be ingested.

F. Residue Chemistry and Tolerance Reassessment

- Hydroxy atrazine tolerances: Only hydroxy atrazine (G-34048) and desethylhydroxy atrazine (GS-17794) should be included in the tolerance expression for hydroxy triazines because the other hydroxy triazines are very minor components in the crop metabolic profiles.

- Wheat hay: In a 1995 EPA memorandum, the Agency recommended that a radiolabeled field residue study in fallow/wheat would satisfy the magnitude of the residue requirement for wheat. Therefore a full geography wheat hay study should not be required.

- Milk tolerance: According to all available data, the milk tolerance should remain at 0.02 ppm.

- Percent crop treated: High values (in some cases implausible) are assigned for percent crop treated, e.g. 97% corn and 100% sorghum treated. Also, information was not given on data sources nor was a rationale given for the weighting procedure for estimating usage.

- Label changes: When listing a registrant's proposed label change for a specific use on an atrazine label, the identity of the registrant should be disclosed.

G. Mammalian Toxicology

- Toxicity Endpoint Selection: In the Preliminary Human Health Risk Assessment for Atrazine, EPA has incorrectly utilized NOELS defined in studies characterizing the effects of atrazine on the endocrine system of rodents in the development of assessments estimating risk for infants, neonates, juveniles, and adults. In the preliminary assessment, the NOEL from a 6 month chronic rodent study conducted in sexually mature female Sprague-Dawley rats was used to represent the intermediate-term exposure of infants, children, young adults, and adults. Syngenta recommends this preliminary determination be reconsidered because there are shorter duration studies targeting selected age brackets that better represent these population subgroups (See Table 1 for Toxicity Endpoints).

- FQPA Uncertainty Factor: EPA's preliminary decision to retain the FQPA 10x uncertainty factor is not supported by the data for all age groups and exposure durations as discussed below.

    - Infant and Children Sensitivity: Developmental toxicity studies conducted on atrazine at NHEERL have been cited as evidence that infants are more sensitive than adults. In fact, the lowest atrazine NOEL (1.8 mg/kg/day) is derived from a chronic study where atrazine

was administered to adult female Sprague-Dawley rats for 6 months. The NOELS for all developmental parameters evaluated (effects on in utero development [NOEL = 50 mg/kg/day][1], effect on prolactin secretion during the early post-partum period [NOEL = 13 mg/kg/day][2], effect on male preputial separation [NOEL = 6.3 mg/kg/day][3] and effect on vaginal opening [NOEL = 25 mg/kg/day][4] all were observed at higher doses indicating that developing organisms are less sensitive than adults.

- *in utero* Carcinogenicity study: The results from an *in utero* carcinogenicity study on atrazine indicates that exposure of female Sprague-Dawley rats to atrazine and its dealkylated metabolites *in utero*, during lactation, and during sexual maturation does not cause an increase in sensitivity to atrazine.[5]

- Developmental toxicity: In the developmental toxicity study conducted in rat on diaminochloro-triazine[6] EPA concluded that the fetal and maternal NOELs in this study were 2.5 and 25 mg/kg/day, respectively, whereas the study director at the performing laboratory concluded that the fetal (based on delayed ossification) at 25 mg/kg/day and maternal (based on a 10% reduction in food consumption and 32% reduction in body weight at GD 6-8 at 25 mg/kg/day) NOELS were both 2.5 mg/kg/day. Based on this difference in interpretation, EPA has requested that Syngenta conduct a multigeneration reproduction study on diaminochloro-triazine. An additional developmental toxicity study may be needed to better characterize the dose-response relationship (10-fold difference between 25 and 25 mg/kg/day) because of the discrepancy in interpretation of this study by EPA and the performing laboratory.

- Request for a multigeneration reproduction study on diaminochloro-triazine: A multigeneration production study on diaminochloro-triazine (DACT) will not resolve the questions raised concerning *in utero* development (delayed ossification of bones) because these parameters are not evaluated in such studies. The multigeneration study conducted on atrazine[7] did not show any differences in the dose at which the adult and the fetus respond to treatment. If the EPA's conclusions about diaminochloro-triazine are correct, differences should have occurred because metabolism studies[8] have demonstrated that the major rodent metabolite of atrazine is diaminochloro-triazine. Syngenta would appreciate an opportunity to further discuss with the Agency the rationale of the conduct of this study using DACT.

- LH surge suppression studies: Syngenta has conducted two studies[9,10] to directly compare the effects of atrazine and diaminochloro-triazine on LH surge suppression in the female Sprague-Dawley rat; EPA has reviewed the first study[9] and the second study[10] is expected to be submitted to EPA

in March, 2001. The results indicate that the NOELS for atrazine and diaminochloro-triazine are approximately the same.

- PBPK Studies: Syngenta is developing a physiologically based pharmacokinetic model (PBPK) to characterize and scale tissue dose in rodent studies to tissue dose in primates. The model will then be adjusted for developing organisms, and the magnitude of the scale factors will be determined. Using this method, Syngenta will determine the magnitude of the uncertainty factor needed when extrapolating from rodent to man.

- Additional safety factors / CNS Function: Extra safety factors for children exposed to chemicals that affect the function of the rodent CNS is triggered when there is evidence that infants and children may be more sensitive than adults. As discussed above, all the evidence indicates that in fact developing organisms are less sensitive than are adults to atrazine.

- Acute NOEL: Syngenta notes that the toxicity endpoint selected by EPA for acute exposure is based upon a developmental effect (delayed bone ossification) and not endocrinological or central nervous system effects. EPA should drop the FQPA 10X factor for acute risk assessment.

- Uncertainty over Magnitude of Exposure via Drinking Water: The preliminary risk assessment expresses some uncertainty about the magnitude of exposure of the population to total chloro-triazine when, in fact, Syngenta has conducted an extensive characterization of the concentration of atrazine and its metabolite concentrations in potable surface and groundwater (to be submitted). Furthermore, Syngenta has developed and submitted regression equations to predict total chloro-triazine concentrations in surface water based on monitoring data for atrazine and its chloro-triazine degradates. These data show that total chloro-triazine concentrations in surface water are no greater than a factor of two times the corresponding atrazine concentrations. Similar work is underway to characterize total chloro-triazine concentrations in groundwater CWS.

H. Deterministic vs. Probabilistic Risk Assessment for Drinking Water

EPA has acknowledged that the deterministic risk assessment on total chloro-triazine exposure via diet and water would likely be conservative. Syngenta has conducted a probabilistic risk assessment on the aggregate dietary (deterministic estimates from EPA's draft RED) and drinking water concentrations of total chloro-triazines (calculated using EPA regression equations) in surface water for 28 community water systems (Table 2) that reported some of the highest exposure values. The assessment was conducted on the combined monitoring data from Syngenta (PLEX and the Voluntary Monitoring Program) and the Acetochlor Registration Partnership (ARP). Toxicity endpoints were based upon the most sensitive endpoints for each exposure duration and subpopulation in Table 1.

Distributions of total chloro-triazine daily doses (Acute), monthly average daily doses (Short-Term), quarterly average daily doses (Intermediate-Term / two scenarios), and lifetime average daily doses (Chronic) were determined and expressed as a percentage of the acute, short-term, intermediate-term and chronic RfD for atrazine.

The results are summarized in Table 3 and the estimated daily doses and their respective percentiles are presented in Appendices 1-5 and 6-10, respectively.

The results indicate that none of the 28 community water systems exceeded the Drinking Water Level of Comparison for the Acute, short-term (Monthly Average), intermediate term (Quarterly Average), long term (Annual Average) or life time (Average calculated over a lifetime) at the 99.9^{th} percentile of exposure. Please note that although the extra 10X uncertainty factor was employed to calculate the RfD's used in the drinking water assessment, Syngenta does not believe that application of the factor for atrazine is scientifically valid.

Table 1
Summary of Toxicity Endpoints for Atrazine

Subpopulation/ Age	Toxicity Study NOEL (mg/kg/day)	UF* (100 + 10)	Adjusted RfD (mg/kg/day)	DWLOC* (ppb)
Acute Exposure (1 Day)				
Females 13 - 50	10 mg/kg/day	1000	0.01	298
Short Term Exposure (1-7 Days)				
Infants < 1 Year	13[a]	1000	0.013	90
Children 1-6 Years	6.3(50)[b]	1000	0.0063	81
Children 7-12 Years	6.3(50)[b]	1000	0.0063	186
Female 13-50	5[c]	1000	0.005	167
Male 13-19	5[c]	1000	0.005	189
Male 20+	5[c]	1000	0.005	189
All	5[c]	1000	0.005	189
Intermediate Term Exposure (7 Days – Several Months)				
Infants < 1 Year	13[a]	1000	0.013	90
Children 1-6 Years	6.3(50)[b]	1000	0.0063	81
Children 7-12 Years	6.3(50)[b]	1000	0.0063	186
Male or females 13-50	5[c]	1000	0.005	189
All	5[c]	1000	0.005	189
Long Term Exposure 3 Months – Lifetime				
All Subgroups	1.8[d]	1000	0.0018	68
All Subgroups	40[e,f]	1000	0.04	1511

* UF = 1000 proposed by EPA; the appropriate UF will be determined experimentally using PBPK models.
** DWLOC was calculated after the dietary contribution of atrazine was aggregated to exposure via water.
[a] Developmental NOEL = 13 mg/kg/day (Male Wistar Rat) Effect on prolactin/prostatitis (Stoker et. al., 1999)[2].
[b] Developmental NOEL = 6.3 mg/kg/day (Male Wistar Rat) Effect on preputial separation (Stoker et. al., 2000)[3]; Developmental NOEL = 50 mg/kg/day (Male SD Rat) Effect on preputial separation (Trentacosta et.al. In press)[14]; DWLOC calculated from the 6.3 mg/kg/day NOEL.
[c] Subchronic NOEL = 5 mg/kg/day (Female SD Rat) LH surge suppression (Morseth, S. et.al., 1996a)[11].
[d] Chronic NOEL = 1.8 mg/kg/day (Female SD Rat) LH surge suppression (Morseth, S. et.al., 1996b)[12]
[e] Chronic NOEL = 40 mg/kg/day; (Female Fischer 344 Rat) Estrous cycle disruption (Thakur A.K, 1991) [13]
[f] Chronic NOEL = 40 mg/kg/day (Fischer-344 rats) LH surge suppression (Submission 3/2001).

Table 2
Location of 28 Selected Community Water Systems (CWSs)

CWS Index	Location				
	CWS #	CWS Name	City	County	State
1.	IA5903011	Chariton Municipal Water Works	Chariton	Lucas	IA
2.	IL0050300	Sorento Water Treatment Plant	Sorento	Bond	IL
3.	IL0250100	Flora Water Treatment Plant	Flora	Clay	IL
4.	IL0470200	W. Salem Water Treatment Plant	West Salem	Edwards	IL
5.	IL0510150	Farnia Water Treatment Plant	Farnia	Fayette	IL
6.	IL0610400	White Hall Water Treatment Plant	White Hall	Greene	IL
7.	IL1170150	Carlinville Water Works	Carlinville	Macoupin	IL
8.	IL1170400	Gillespie Water Treatment Plant	Gillespie	Macoupin	IL
9.	IL1170500	Hettick Water Supply	Hettick	Macoupin	IL
10.	IL1170950	Shipman Water Treatment Plant	Shipman	Macoupin	IL
11.	IL1175150	Palmyra-Modesto Water Commission	N Palmyra Twp	Macoupin	IL
12.	IL1175200	ADGPTV Water Commission	North Otter Twp	Macoupin	IL
13.	IL1210300	Kinmundy Water Treatment Plant	Kinmundy	Marion	IL
14.	IL1210450	Salem Water Treatment Plant	Salem	Marion	IL
15.	IL1214220	Centralia Water Treatment Plant	Centralia	Marion	IL
16.	IL1350300	Hillsboro Water Treatment Plant	Hillsboro	Montgomery	IL
17.	IL1910450	Wayne City Water Plant	Wayne City	Wayne	IL
18.	IL0250250	Louisville Water Treatment Plant	Louisville	Clay	IL
19.	IN5219006	Holland Water Department	Holland	Dubois	IL
20.	IN5240008	North Vernon Water Department	North Vernon	Jennings	IN
21.	IN5269001	Batesville Water Utility	Batesville	Ripley	IN
22.	IN5272001	Scottsburg Water Treatment Plant	Scottsburg	Scott	IN
23.	LA1047002	Iberville Water District #3	White Castle	Iberville	LA
24.	MO1010363	Higginsville Water Treatment Plant	Higginsville	Lafayette	MO
25.	MO2010112	Bucklin Water Department	Bucklin	Linn	MO
26.	M02010812	Vandalia Water Treatment Plant	Vandalia	Audrain	MO
27.	OH0801511	Sardinia Water Treatment Plant	Sardinia	Brown	OH
28.	OH4502314	Newark Water Works	Newark	Licking	OH

Table 3
Number of Community Water Systems with Distributions of Average Daily Total Chloro-Triazine Doses that Exceeded the DWLOC at the 100th and the 99.9th Percentile

Appendix Number	Basis for Reference Dose	Number of 28 CWS's Exceeding the DWLOC at the 100th Percentile				
		Infants	**Children 1 to 6**	**Children 7 to 12**	**Adults 13 to 50**	**All**
7	Acute	Not Applicable	Not Applicable	Not Applicable	0	Not Applicable
8	Short Term	1	1	1	0	4
9	Intermediate Term	0	0	0	0	2
10	Intermediate Term	0	0	0	0	2
11	Chronic	Not Applicable	Not Applicable	Not Applicable	Not Applicable	0
		Number of Estimated Dose Distributions with Less Than 99.9% Below the RfD among the 28 PWSs				
		Infants	**Children 1 to 6**	**Children 7 to 12**	**Adults 13 to 50**	**All**
7	Acute	Not Applicable	Not Applicable	Not Applicable	0	Not Applicable
8	Short Term	0	0	0	0	0
9	Intermediate Term	0	0	0	0	0
10	Intermediate Term	0	0	0	0	0
11	Chronic	Not Applicable	Not Applicable	Not Applicable	Not Applicable	0

Appendix 1
Estimated Total Chloro-Triazine Daily Doses (Acute) at the 99.9th Percentile

CWS Index	Acute Daily Dose (mg/kg/day) at the 99.9th Percentile for Females Ages 13 – 50
1.	6.40E-04
2.	5.20E-04
3.	8.80E-04
4.	7.50E-04
5.	9.10E-04
6.	8.30E-04
7.	9.40E-04
8.	1.90E-03
9.	2.00E-03
10.	1.80E-03
11.	1.10E-03
12.	9.60E-04
13.	7.50E-04
14.	3.00E-03
15.	1.20E-03
16.	1.10E-03
17.	1.40E-03
18.	1.00E-03
19.	8.70E-04
20.	1.10E-03
21.	8.00E-04
22.	8.90E-04
23.	1.40E-03
24.	1.00E-03
25.	7.30E-04
26.	1.20E-03
27.	2.20E-03
28.	9.20E-04

Appendix 2
Estimated Monthly Average (Short-Term)
Daily Total Chloro-Triazine Doses at the 99.9th Percentile

CWS Index	Monthly Average Daily Dose (mg/kg/day) at the 99.9th Percentile				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	All
1.	2.40E-03	1.00E-03	8.60E-04	5.70E-04	6.90E-04
2.	2.20E-03	9.00E-04	8.20E-04	5.20E-04	6.80E-04
3.	3.20E-03	1.20E-03	1.10E-03	6.90E-04	1.10E-03
4.	3.30E-03	1.20E-03	1.00E-03	7.70E-04	1.10E-03
5.	3.10E-03	1.30E-03	1.20E-03	7.80E-04	1.00E-03
6.	3.50E-03	1.50E-03	1.20E-03	8.00E-04	1.30E-03
7.	2.80E-03	1.20E-03	1.10E-03	6.60E-04	9.70E-04
8.	8.20E-03	3.00E-03	2.40E-03	1.70E-03	2.20E-03
9.	7.20E-03	2.50E-03	2.40E-03	1.80E-03	2.50E-03
10.	7.10E-03	2.90E-03	2.70E-03	1.80E-03	2.40E-03
11.	4.30E-03	1.80E-03	1.50E-03	1.10E-03	1.40E-03
12.	3.50E-03	1.30E-03	1.00E-03	7.60E-04	1.10E-03
13.	2.70E-03	1.00E-03	9.00E-04	7.20E-04	9.20E-04
14.	1.20E-02	4.50E-03	4.20E-03	2.70E-03	3.40E-03
15.	4.80E-03	2.10E-03	1.80E-03	1.10E-03	1.60E-03
16.	5.60E-03	1.60E-03	1.50E-03	1.10E-03	1.40E-03
17.	4.20E-03	1.60E-03	1.10E-03	1.10E-03	1.10E-03
18.	3.90E-03	1.70E-03	1.60E-03	9.10E-04	1.30E-03
19.	3.70E-03	1.60E-03	1.30E-03	8.30E-04	1.10E-03
20.	3.70E-03	1.60E-03	1.30E-03	8.10E-04	1.00E-03
21.	3.20E-03	1.30E-03	1.10E-03	7.70E-04	9.00E-04
22.	4.00E-03	1.60E-03	1.40E-03	8.70E-04	1.50E-03
23.	4.20E-03	1.80E-03	1.40E-03	9.80E-04	1.40E-03
24.	4.30E-03	1.80E-03	1.60E-03	1.00E-03	1.60E-03
25.	2.70E-03	1.10E-03	1.10E-03	7.30E-04	9.70E-04
26.	4.80E-03	1.70E-03	1.50E-03	1.00E-03	1.50E-03
27.	9.30E-03	3.80E-03	3.00E-03	2.10E-03	2.60E-03
28.	2.10E-03	7.40E-04	6.20E-04	4.40E-04	6.20E-04

Appendix 3
Estimated Quarterly Average (Intermediate-Term)
Daily Total Chloro-Triazine Doses at the 99.9th Percentile

CWS Index	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	All
1.	2.10E-03	8.20E-04	6.60E-04	4.60E-04	5.00E-04
2.	1.80E-03	8.20E-04	7.00E-04	4.40E-04	7.20E-04
3.	2.10E-03	8.80E-04	8.50E-04	5.40E-04	8.10E-04
4.	2.60E-03	1.20E-03	9.00E-04	6.20E-04	8.20E-04
5.	2.80E-03	1.00E-03	9.60E-04	6.80E-04	8.90E-04
6.	3.30E-03	1.50E-03	1.20E-03	7.70E-04	1.30E-03
7.	2.10E-03	9.20E-04	7.80E-04	5.10E-04	7.90E-04
8.	5.80E-03	2.10E-03	1.80E-03	1.40E-03	1.60E-03
9.	5.10E-03	2.10E-03	1.80E-03	1.20E-03	1.80E-03
10.	6.90E-03	2.90E-03	2.80E-03	1.50E-03	2.80E-03
11.	4.10E-03	1.70E-03	1.60E-03	9.70E-04	1.50E-03
12.	2.30E-03	9.60E-04	8.70E-04	5.40E-04	9.90E-04
13.	2.30E-03	9.40E-04	8.50E-04	5.30E-04	8.50E-04
14.	7.10E-03	2.80E-03	2.30E-03	1.70E-03	2.20E-03
15.	3.10E-03	1.40E-03	1.20E-03	7.50E-04	1.10E-03
16.	3.10E-03	1.10E-03	1.00E-03	7.70E-04	9.00E-04
17.	2.20E-03	9.20E-04	8.10E-04	5.20E-04	8.10E-04
18.	3.00E-03	1.30E-03	1.20E-03	7.10E-04	1.00E-03
19.	3.60E-03	1.50E-03	1.20E-03	8.30E-04	1.00E-03
20.	2.10E-03	8.70E-04	8.10E-04	5.30E-04	7.30E-04
21.	3.30E-03	1.20E-03	1.00E-03	7.80E-04	9.00E-04
22.	3.90E-03	1.60E-03	1.30E-03	8.70E-04	1.10E-03
23.	2.00E-03	8.80E-04	8.10E-04	4.90E-04	8.60E-04
24.	3.20E-03	1.30E-03	1.20E-03	7.80E-04	1.20E-03
25.	2.90E-03	1.20E-03	1.00E-03	7.30E-04	8.90E-04
26.	2.80E-03	1.20E-03	9.70E-04	6.40E-04	1.10E-03
27.	6.30E-03	2.60E-03	2.40E-03	1.40E-03	1.90E-03
28.	1.30E-03	5.80E-04	5.60E-04	3.30E-04	4.90E-04

Appendix 4
Estimated Quarterly Average (Intermediate-Term)
Daily Total Chloro-Triazine Doses at the 99.9th Percentile

CWS Index	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	All
1.	2.00E-03	8.60E-04	7.40E-04	5.00E-04	6.00E-04
2.	1.80E-03	7.90E-04	7.30E-04	4.40E-04	6.60E-04
3.	2.10E-03	8.90E-04	8.00E-04	5.50E-04	7.60E-04
4.	2.20E-03	9.70E-04	8.70E-04	5.20E-04	8.40E-04
5.	2.50E-03	9.60E-04	8.90E-04	6.00E-04	9.50E-04
6.	3.30E-03	1.40E-03	1.20E-03	7.60E-04	1.30E-03
7.	2.30E-03	1.00E-03	9.10E-04	5.60E-04	8.60E-04
8.	6.00E-03	2.50E-03	2.00E-03	1.40E-03	1.60E-03
9.	6.20E-03	2.30E-03	2.10E-03	1.50E-03	2.00E-03
10.	6.80E-03	2.90E-03	2.70E-03	1.80E-03	2.30E-03
11.	4.30E-03	1.80E-03	1.60E-03	9.60E-04	1.50E-03
12.	2.60E-03	1.10E-03	9.40E-04	6.50E-04	1.00E-03
13.	2.50E-03	9.30E-04	8.30E-04	6.00E-04	8.10E-04
14.	7.20E-03	3.10E-03	2.70E-03	1.70E-03	2.40E-03
15.	2.90E-03	1.30E-03	1.20E-03	7.00E-04	1.20E-03
16.	3.00E-03	1.30E-03	1.10E-03	7.20E-04	9.90E-04
17.	2.60E-03	9.70E-04	8.70E-04	6.20E-04	7.50E-04
18.	3.20E-03	1.30E-03	1.20E-03	7.50E-04	1.00E-03
19.	2.90E-03	1.30E-03	1.20E-03	7.40E-04	9.50E-04
20.	2.70E-03	1.00E-03	8.50E-04	6.80E-04	8.20E-04
21.	2.90E-03	1.20E-03	9.80E-04	7.40E-04	8.20E-04
22.	3.10E-03	1.30E-03	1.20E-03	7.30E-04	1.10E-03
23.	2.80E-03	1.20E-03	1.10E-03	6.30E-04	9.70E-04
24.	4.30E-03	1.60E-03	1.40E-03	9.40E-04	1.20E-03
25.	2.70E-03	1.10E-03	1.10E-03	5.80E-04	1.10E-03
26.	2.70E-03	1.10E-03	1.00E-03	6.90E-04	1.10E-03
27.	7.50E-03	3.00E-03	2.80E-03	1.80E-03	2.30E-03
28.	1.20E-03	5.10E-04	4.80E-04	3.20E-04	5.30E-04

Appendix 5
Estimated Lifetime Average (Chronic)
Daily Total Chloro-Triazine Doses at the 99.9th Percentile

CWS Index	Chronic Dose = Lifetime Average Daily Dose at the 99.9th Percentile for the General Population
1.	1.70E-04
2.	1.90E-04
3.	1.80E-04
4.	2.80E-04
5.	3.20E-04
6.	2.30E-04
7.	2.80E-04
8.	2.70E-04
9.	5.70E-04
10.	4.50E-04
11.	3.70E-04
12.	3.40E-04
13.	1.60E-04
14.	3.40E-04
15.	2.90E-04
16.	2.60E-04
17.	1.90E-04
18.	2.50E-04
19.	1.80E-04
20.	1.50E-04
21.	2.40E-04
22.	1.80E-04
23.	2.20E-04
24.	2.40E-04
25.	1.30E-04
26.	2.80E-04
27.	1.90E-04
28.	1.00E-04

Appendix 6
Percentage of the Estimated Distribution of Daily (Acute) Doses Below the Acute RfD

CWS Index	Percentage Below Acute RfD for Females Age 13 – 50 Years
1.	100%
2.	100%
3.	100%
4.	100%
5.	100%
6.	100%
7.	100%
8.	100%
9.	100%
10.	100%
11.	100%
12.	100%
13.	100%
14.	100%
15.	100%
16.	100%
17.	100%
18.	100%
19.	100%
20.	100%
21.	100%
22.	100%
23.	100%
24.	100%
25.	100%
26.	100%
27.	100%
28.	100%

Appendix 7
Percentage of the Estimated Distribution of Monthly Average (Short-Term) Daily Total Chloro-Triazine Doses Below the Short-Term RfD

CWS Index	Percentage Below Short-Term RfD				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	All
1.	100%	100%	100%	100%	100%
2.	100%	100%	100%	100%	100%
3.	100%	100%	100%	100%	100%
4.	100%	100%	100%	100%	100%
5.	100%	100%	100%	100%	100%
6.	100%	100%	100%	100%	100%
7.	100%	100%	100%	100%	100%
8.	100%	100%	100%	100%	100%
9.	100%	100%	100%	100%	100%
10.	100%	100%	100%	100%	99.99%
11.	100%	100%	100%	100%	100%
12.	100%	100%	100%	100%	100%
13.	100%	100%	100%	100%	100%
14.	99.95%	99.98%	99.99%	100%	99.96%
15.	100%	100%	100%	100%	100%
16.	100%	100%	100%	100%	99.99%
17.	100%	100%	100%	100%	100%
18.	100%	100%	100%	100%	100%
19.	100%	100%	100%	100%	100%
20.	100%	100%	100%	100%	100%
21.	100%	100%	100%	100%	100%
22.	100%	100%	100%	100%	100%
23.	100%	100%	100%	100%	100%
24.	100%	100%	100%	100%	100%
25.	100%	100%	100%	100%	100%
26.	100%	100%	100%	100%	100%
27.	100%	100%	100%	100%	99.98%
28.	100%	100%	100%	100%	100%

Appendix 8
Percentage of the Estimated Distribution of Quarterly Average (Intermediate-Term) Daily Dose Below the Intermediate-Term RfD

CWS Index	Percentage Below Intermediate-Term RfD Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	All
1.	100%	100%	100%	100%	100%
2.	100%	100%	100%	100%	100%
3.	100%	100%	100%	100%	100%
4.	100%	100%	100%	100%	100%
5.	100%	100%	100%	100%	100%
6.	100%	100%	100%	100%	100%
7.	100%	100%	100%	100%	100%
8.	100%	100%	100%	100%	100%
9.	100%	100%	100%	100%	100%
10.	100%	100%	100%	100%	99.98%
11.	100%	100%	100%	100%	100%
12.	100%	100%	100%	100%	100%
13.	100%	100%	100%	100%	100%
14.	100%	100%	100%	100%	99.99%
15.	100%	100%	100%	100%	100%
16.	100%	100%	100%	100%	100%
17.	100%	100%	100%	100%	100%
18.	100%	100%	100%	100%	100%
19.	100%	100%	100%	100%	100%
20.	100%	100%	100%	100%	100%
21.	100%	100%	100%	100%	100%
22.	100%	100%	100%	100%	100%
23.	100%	100%	100%	100%	100%
24.	100%	100%	100%	100%	100%
25.	100%	100%	100%	100%	100%
26.	100%	100%	100%	100%	100%
27.	100%	100%	100%	100%	100%
28.	100%	100%	100%	100%	100%

Appendix 9
Percentage of the Estimated Distribution of Quarterly Average (Intermediate-Term) Daily Dose Below the Intermediate-Term RfD

PWS Index	Percentage Below Intermediate-Term RfD Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	All
1.	100%	100%	100%	100%	100%
2.	100%	100%	100%	100%	100%
3.	100%	100%	100%	100%	100%
4.	100%	100%	100%	100%	100%
5.	100%	100%	100%	100%	100%
6.	100%	100%	100%	100%	100%
7.	100%	100%	100%	100%	100%
8.	100%	100%	100%	100%	100%
9.	100%	100%	100%	100%	100%
10.	100%	100%	100%	100%	99.99%
11.	100%	100%	100%	100%	100%
12.	100%	100%	100%	100%	100%
13.	100%	100%	100%	100%	100%
14.	100%	100%	100%	100%	99.99%
15.	100%	100%	100%	100%	100%
16.	100%	100%	100%	100%	100%
17.	100%	100%	100%	100%	100%
18.	100%	100%	100%	100%	100%
19.	100%	100%	100%	100%	100%
20.	100%	100%	100%	100%	100%
21.	100%	100%	100%	100%	100%
22.	100%	100%	100%	100%	100%
23.	100%	100%	100%	100%	100%
24.	100%	100%	100%	100%	100%
25.	100%	100%	100%	100%	100%
26.	100%	100%	100%	100%	100%
27.	100%	100%	100%	100%	100%
28.	100%	100%	100%	100%	100%

Appendix 10
Percentage of the Estimated Distribution of Lifetime Average Daily Doses (Chronic) Below the Chronic RfD

CWS Index	Percentage Below Chronic RfD (0.0018 mg/kg-day)
1.	100%
2.	100%
3.	100%
4.	100%
5.	100%
6.	100%
7.	100%
8.	100%
9.	100%
10.	100%
11.	100%
12.	100%
13.	100%
14.	100%
15.	100%
16.	100%
17.	100%
18.	100%
19.	100%
20.	100%
21.	100%
22.	100%
23.	100%
24.	100%
25.	100%
26.	100%
27.	100%
28.	100%

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Attachment 1

Syngenta's Comments on EPA's November 15, 2000 "Atrazine: Toxicology Chapter of the Reregistration Eligibility Decision"

Atrazine: Toxicology Chapter of the Reregistration Eligibility Decision.

1. Section 4.9 Special/Other Studies, 4.9.1, pages 22 through 27; 4.9.2, pages 28 and 29.

   Numerous instances of incomplete units of measurement or special symbols not included in the text.

2. Section 4.10 Toxicology data for major metabolites of atrazine, 4.10.1 Diaminochloro-triazine metabolite (DACT) –2-chloro-4-amino-6-amino s-triazine: didealkyl atrazine; G-28273; 870.3100 – Subchronic oral toxicity in rats.

   DACT was fed to Sprague-Dawley rats for 90-days at concentrations of 0,10, 100, 250 or 500 ppm (MRID 43013207). Effects on body weight gain were observed at 250 and 500 ppm in females and males at 500 ppm. No other effects were observed in males at 10, 100 and 250 ppm. In addition, the authors of this study concluded that estrous cycle length and increase in the incidence of females exhibiting cycles with prolonged or persistent estrus and/or diestrus at 100 ppm and above. Since this completion of this study in 1991, however, Syngenta has commissioned another study in 1999 that was conducted at Covance Laboratories [Covance Study 6117-399 (Atrazine/Simazine/DACT Bridge Study)]. This study has a 26-week treatment phase in which 16 female Sprague-Dawley rats/group were fed diet containing DACT at concentrations of 0, 17, 34, 48 and 270 ppm (Final Report - 3/01). The cyclicity of these females were evaluated at Weeks 1-2, 5-6, 9-10, 13-14, 17-18, 21-22, and 25-26. It is anticipated based on preliminary findings that the duration of the estrous cycle or the incidence of females exhibiting prolonged or persistent estrus and/or diestrus were not noted at 17, 34, or 48 ppm. The NOEL should be 48 ppm or approximately 5 mg/kg/day.

3. Section 4.10 Toxicology data for major metabolites of atrazine, 4.10.1 Diaminochloro-triazine metabolite (DACT) –2-chloro-4-amino-6-amino s-triazine: didealkyl atrazine; G-28273; 870.3700 - Developmental toxicity in rats.

   In this developmental toxicity study (MRID 41392402), 26 pregnant female Sprague-Dawley rats/group were administered atrazine by gavaged at 0, 2.5, 25, 75 and 150 mg/kg/day. The EPA reviewer suggested that the maternal LOAEL is 75 mg/kg/day, based on decreased body weight gain during dosing and NOAEL level is 25 mg/kg/day. However, the study authors, more conservatively, concluded that the maternal LOAEL was 25 mg/kg/day, based on transient treatment related reduction in food consumption (-10% at GD 6-8), and body weight gain (-32% at GD 6-8). The authors set the NOAEL lower than the EPA at 2.5 mg/kg/day. Both the EPA and study authors agree that the developmental LOAEL is 25 mg/kg/day based on incomplete ossification of the parietals, interparietals, and hyoids. Syngenta believes as the study authors that the maternal and

developmental NOAELs in this study are 2.5 mg/kg/day or higher considering the 10-fold difference between the NOAEL of 2.5 mg/kg/day and LOAEL of 25 mg/kg/day. More importantly, this developmental toxicity study with DACT does not shown any differential toxicity between the fetus and dams. This interpretation is consistent with the conclusions that the EPA has made in regard to atrazine and its mono-dealkylated metabolites. "There was no evidence of qualitative or quantitative increased susceptibility in two rat and one rabbit developmental toxicity studies using atrazine or in a rat developmental toxicity study using deisopropyl atrazine or a rat developmental toxicity using deethyl atrazine. There was no evidence of increased qualitative or quantitative susceptibility in the two-generation study using atrazine." [Excerpted from 6.0 FQPA CONSIDERATIONS; 6.1 Special Sensitivity to Infants and Children, page 62, paragraph 1].

4. 6.0 FQPA CONSIDERATIONS; 6.1 Special Sensitivity to Infants and Children, page 62.

Syngenta would re-iterate that there is no evidence of qualitative or quantitative increased susceptibility in two rat and one rabbit developmental toxicity studies using atrazine, a rat developmental toxicity study using deisopropyl atrazine, a rat developmental toxicity using deethyl atrazine, or the developmental toxicity study using 2-chloro-4-amino-6-amino s-triazine, DACT.

Additionally, the studies conducted on atrazine at NHEERL do not provide evidence that infants are more sensitive than adults. In fact, the lowest atrazine NOEL (1.8 mg/kg/day) is derived from a chronic study where atrazine was administered to adult female Sprague-Dawley rats for 6 months. The NOEL was based on effects on the estrous, LH and prolactin surges at 3.65 mg/kg/day. The NOELS for all developmental parameters evaluated (effects on *in utero* development [NOEL = 50 mg/kg/day][1], effect on prolactin secretion during the early postpartum period [NOEL = 13 mg/kg/day][2] , effect on male preputial separation [NOEL = 6.3 mg/kg/day][3] and effect on vaginal opening [NOEL = 25 mg/kg/day][4]. NOEL values in these four studies were established at higher doses than in the chronic study conducted with adults indicating that developing organisms are less sensitive than adults are.

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3. Stoker, T.E., Laws, S.C., Guidici, D.L., & Cooper, R.L. The effect of atrazine on puberty in male Wistar Rats: An evaluation in the protocol for the assessment of puberal development and thyroid function. Toxicological Sciences, 58, 50-59, 2000.

4. Laws, S.C., Ferrell, J.M., Stoker, T.L., Schmid, J., & Cooper, R.L. The effects of atrazine on female Wistar Rats: An evaluation of the protocol for assessing puberal development and thyroid function. Toxicological Sciences, 58, 366-376, 2000.

Attachment 2

Syngenta's Comments on Use/Usage and Labeling Noted in the EPA's November 30, 2000 Draft "Atrazine: HED's Preliminary Human Health Risk Assessment (and Associated EPA Documents) for the Reregistration Eligibility Decision (RED)

Summary

This section contains comments on usage and labeling information provided as background in the identified subject documents. Details are presented below.

Preliminary Human Health Risk Assessment

Detailed Comments:

1. Page 5, 6th Bullet Point; and Page 6: "Further reduction of the application rates for corn and sorghum to 2.5 lbs. a.i./acre/ year" should be qualified to note that this is a total of pre-emergence and post-emergence applications.

2. Page 6, 4th Paragraph, Line 2: Regarding the description of registered uses for atrazine ("Currently registered uses of atrazine"), please note that wheat as a registered use site is limited to Ecofallow programs where there is a sequence of fallow/crops grown following the atrazine treatment. In all ecofallow scenarios, treatment is to follow wheat harvest. Wheat is not a target crop. Also please qualify the use on "turf" as being limited to southern turfgrass, consistent with the species of turfgrass registered for atrazine.

3. Page 6, 4th Paragraph, Line 3: The characterization of the use of atrazine in CRP rangeland and the grazing prohibitions should be further clarified as presented in the document. The labeled use is limited to four states, OK, NE, OR, and TX. Grazing or cutting and feeding of hay on CRP acres are not permitted, except for severe drought conditions. But, if atrazine was used, grazing and making of hay are restricted. Only beef cattle are placed in these CRP situations. If atrazine is used in CRP establishment, it is usually during the first year of the program, and there is insufficient grass growth during a drought season for grazing or making of hay to be practical. Therefore, it is not appropriate to factor rangeland use into the dietary intake for dairy cattle.

4. Page 7, 1st Paragraph, Line 2: "Atrazine is formulated variously as dry flowables, emulsifiable concentrates, and ready-to-use solutions." Please note that to our knowledge, formulation technology for atrazine does not allow for emulsifiable concentrates. Only water-based flowable formulations are currently registered. Also, there are no ready-to-use solutions of atrazine.

5. Page 14, 1st Paragraph, Line 6: In the "Preliminary risk estimates associated with occupational exposures to atrazine", relative to conifer use, further explanation of the use pattern is necessary. The exposure scenarios described in the document for aerial applications of atrazine in conifer forest situations are not realistic, due to a number of factors, including an incorrect assumption of a maximum of 1200 acres treated per day. This is a limited use pattern for atrazine, particularly in conifer forests and Christmas tree farms. Because of the nature of the terrain in these farms, helicopters must be used to make aerial applications. Due to limits in load capacity, small acreage sites, and limited hours of favorable weather conditions, helicopters can only spray a maximum of 150-350 acres/day, not the 1200 acres listed in the assessment. Furthermore, with relatively minor use of atrazine, applications would take place only over the course of a week, entailing only a short-term (and not intermediate-term) exposure. Only short-term risks should be calculated in association with this use pattern.

6. Page 14, 1st Paragraph, Line 7 and Page 19, 1st Paragraph, Line 11: First paragraph and Page 19, Data Gaps; "The treatment, mixing, loading, and application of dry and liquid fertilizers, both commercially (including cooperatives) and on-farm…" Dry fertilizer impregnation of atrazine is not possible on farm, and must be conducted in a facility where proper equipment is present. On page 19 under Data Gaps, please note that on-farm impregnation of dry fertilizers is not possible, so such data should not be requested. Automated large-scale blenders which use machinery that limits exposures are used to prepare these fertilizer/atrazine preparations. In addition, the assumption that 960 tons of fertilizer is mixed and loaded within a day is not correct. The actual amount is more likely to be 150 - 300 tons. Syngenta will be submitting a document that will more fully describe the treatment process, possible exposure scenarios, and risk calculations.

7. Page 36, 1st Paragraph, Line 4: "Section 4.0 Exposure Assessment, Summary of Registered Uses" indicates Novartis (now Syngenta) has orchard grass and hay uses labeled. This is incorrect as noted by EPA on page 6. Syngenta had requested these tolerances be withdrawn at the time the labeled use was deleted during the data call-in process. Also, the use on wheat and turf needs to be clarified as noted in comments above (i.e. for page 6).

8. Page 37, Table 4: Table 4 lists several Syngenta formulations as being registered, when two of these have been voluntarily cancelled (note: Bicep II and Bicep Lite II). Please remove these formulations from the registered formulations list. Also, the use on CRP rangeland should be clarified as noted in comments above. We also note the mention in the document of a product, Oxon Italia 5L, for use on roadsides; please note that this product registration is held by another registrant and that this product has uses not supported by Syngenta. The use rate for this formulation is equivalent to 2.5 lbs. a.i./A, which is higher than any other products labeled for the roadside use, including products registered by Syngenta. This rate is not supported by our data.

9. Page 46, 1st Paragraph, Line 6: "BEAD has recently updated the percent of crop treated (PCT) information for atrazine…..for other corn; 82%-97%." Syngenta strongly disagrees with this PCT value, based on currently available market information. The USDA NASS reports for 1997, 1998, and 1999 show 69 to 70% of the field corn acres receives an atrazine treatment. Furthermore, the (82%-97%) estimates are not possible, because rotational crop restrictions will prevent use on many acres in the north central part of IA and southern MN.

10. Page 49, 4th Paragraph, Line 5: "Risk characterization and sources of uncertainties" includes in the fourth paragraph a discussion of illegal residues in leafy vegetables and wheat. Explanation of these is difficult since these crops are not registered and are very susceptible to injury caused by atrazine.

11. Page 50, 2nd Paragraph, Line 9: "Atrazine's moderate persistence in soils and high volume of usage are believed to create a reservoir of chemical available for movement down through the soil with irrigation and rainfall." This statement is not supported by either widespread groundwater monitoring data nor the environmental fate characteristics of atrazine as demonstrated in extensive laboratory persistence and mobility data and field dissipation data on parent atrazine and chloro and hydroxy metabolites.

12. Page 73: In the paragraph starting "Even with coveralls, gloves, respirators,…..", there are several assumptions of use which are incorrect or overstated. For example, the assessments used to support this statement included the 4 lb. a.i./A roadside rate. To our knowledge, the only rate supported by actual residue data for this use is the 1 lb. a.i./A rate on our AAtrex labeling. Also, chemical fallow rates should not exceed 3 lbs. a.i./A and CRP rangeland use rates should not exceed 2 lbs. a.i./A, since these are the limits supported by the available databases. Similarly, "largest quantities" of chemical handled is not appropriate for minor use of atrazine in forestry, fallow and CRP. Again, if other registrants have higher application rates than those mentioned above, they are not supported by adequate data and should not be used in the assessment.

Product and Residue Chemistry Chapters

1. Page 3, 1st Paragraph, Line 3: In the "Description of Chemical", add "fallow programs" behind "wheat". Wheat per se is not a target crop for atrazine use. Same comment for Page 33. Also, not all crops can be treated using aerial application. The labels note aerial treatment is possible only when broadcast applications are specified.

2. Page 34, Table 1: Syngenta has requested voluntary cancellation of Bicep II and Bicep Lite II. These formulations should be removed from the assessment.

3. Page 40, 5th Paragraph, Line 2: Under the section headed by "Magnitude of the Residue in Crop Plants", the sentence reads "The adequacy of submitted field trials for sugarcane and wheat is dependent on additional supporting data on storage stability". Please note that Syngenta is only supporting use on wheat as an ecofallow treatment post-harvest to wheat stubble. We do not support wheat as a target crop per se. This same comment applies to the discussion on page 42 under "Wheat".

4. Page 43, 6th Paragraph, Line 6: In the section headed by "Magnitude of the Residue in Processed Food/Feed", the EPA review describes the need for processing data in sugarcane at 5X the application rate per crop season. However, there would be concern to conduct such a study because of potential phytotoxicity to the sugarcane and application of these excessive rates on field sites with shallow water tables. Further, Syngenta must challenge the reasoning for such a request in the first place. The more recent processing study conducted at 2X the maximum label rate, did not indicate concentration of residues in processed commodities occurred. Same comment for page 57 under Tolerances Needed Under 40 CFR section 180.220(a)(1) for wheat hay.

5. Page 57, 4th Paragraph, Line 7: In the section headed by "Tolerances to be Established Under 40 CFR section 180.220(a)(2), please note the following comments on Syngenta supported uses. Syngenta is not supporting perennial rye grasses or orchard grass as use patterns and we are not aware of any other registrants supporting these uses. They should be deleted as tolerance requirements. Also, since wheat is not supported as a target crop, the need for tolerances in wheat straw and stover is questioned.

6. Page 64, Table A: In Table A, under Broadcast for corn (Wheat-Corn-Fallow) in six states, the use rates specified are incorrect. The ND and SD maximum use at >7.5 pH is actually 1.5 lbs. a.i./A, not 1.4 as listed in the table; at <7.5 pH the maximum rate is actual 2 lbs. a.i./A, not 1.8 as listed in the table. Also on page 64, the table incorrectly lists 8 treatments per season to guava; the label indicates "do not apply more frequently than at 4-month intervals," so there can only be 3 treatments per year.

7. Page 66, Table A: Wheat is noted as a target crop. Syngenta is only supporting wheat in various chemical fallow programs where atrazine is applied after wheat harvest. The use pattern allows treatment to wheat stubble after harvest and there is at least a 12 month interval from such a treatment to wheat planting. Note also that typical use practices would have growers using various tillage systems during this program. Application of atrazine at up to 1 lb. a.i./A will not provide weed control in wheat planted after the fallow period. Atrazine treatment after initial application to wheat stubble is not allowed in the chemical fallow program.

Occupational and Residential Exposure Assessment

1. Page 1, 1st Paragraph, Line 5: "It is used as a nonselective herbicide on several other crops, and is widely used on sod and turf, including home lawns and golf courses." Note that atrazine is not used as a nonselective herbicide on crops. Further, the use on sod and turf should be described properly; southern turfgrass is the appropriate designation.

2. Page 4, 2nd Paragraph, Line 5: It is incorrect to list certain of these uses as high rates. For instance, chemical fallow rates should not exceed 3 lbs. a.i./A and CRP rangeland use rates should not exceed 2 lbs. a.i./A, so it is not appropriate to characterize these uses as a high atrazine rates, nor "largest quantities" on minor use crops like forestry, chemical fallow programs and CRP land. Additionally, grasslands is not an accurate description of the use pattern for CRP rangeland, for reasons noted in other comments cited previously. If other registrants have higher rates, again, they are not supported by adequate residue data and therefore, should not be used in the assessment.

3. Page 4, 4th Paragraph, Line 3: Under the heading "Post-application Worker Exposure and Risk Estimates", the sentence reads "The lowest MOEs for trimming /harvesting Christmas trees (120) and harvesting sod (100), used transfer…..exposure estimates". Please note that atrazine treatment is seldom or never followed by trimming/harvesting of trees, since atrazine is applied in spring and trees are harvested in the winter. Also, sod removal or harvesting has a 30 day restriction from application.

4. Page 6, 4th Paragraph, Line 1: Under the heading "Recommendation/Data Requirements" 2nd paragraph, the mixing of atrazine and fertilizers on farm is not done. Dry fertilizer impregnation of atrazine is not possible on farm, and must be conducted in a facility where proper equipment is present. The statement should be modified as indicated. On page 19 under Data Gaps, please note that on-farm impregnation on dry fertilizers is not possible, so such data should not be requested. Automated large-scale blenders that limit exposures do these preparations. Syngenta will be submitting a document that will more fully describe the treatment process, possible exposure scenarios, and risk calculations.

5. Page 12, 3rd Paragraph, Line 6: In the section headed by “Summary of Use Patterns and Formulations”, please clarify use on lawns and turf as being limited to Southern turfgrass only. Also in the listing of weeds controlled by atrazine in the 4th paragraph, eight of the weeds listed are partially controlled and should be so indicated.

6. Page 12, 5th Paragraph, Line 1: At the bottom of the page under the heading “Formulation types and percent active ingredient”, there is an error. These include listing a 90% liquid formulation when, to our knowledge, there is no such formulation registered.

7. Page 13, 4th Paragraph, Line 2: Under the heading “Application Rates and Timing and Frequency of Application”, the sentence reads “With the exception of sugarcane, guava, and macadamia nuts, the registrant has proposed a maximum label rate for all uses of 2.0 lbs. a.i./acre per application. Therefore, although exceptions are listed below, only the 2.0 lb. a.i./acre rate was assessed for the remaining uses.” Syngenta questions to which “registrant” is the Agency referring? We are not aware of any agreement to limit the application rates as noted. There exists on registered atrazine labels from Syngenta and others, uses that allow greater than a 2.0 lb. a.i./acre rate, i.e., conifers, southern turfgrass, and chemical fallow uses, all allow greater than 2.0 lbs. per treatment. Also, in this section, bottom of the page under “Turfgrass (spray applications)”, it notes “There is also a label supporting up to 4 lbs. a.i./acre in FL, which the registrant states will not be supported.” The Syngenta label allows 4 lbs. a.i./acre in muck soils in FL. This rate is necessary for weed control efficacy reasons on this highly organic soil type.

8. Page 14, 6th Paragraph, Line 1: Under the same heading as noted in previous comment, for Sugarcane, it implies that “ (All) Treatments are applied over the sugarcane. “ This is incorrect. Only two applications are allowed after cane emergence. The other two are before cane emergence and at emergence.

9. Page 36: In the section headed by “Baseline” at the bottom of the page, it notes the use rate on bermudagrass rights-of-way is 4 lbs. a.i./A. Syngenta section 24(c) labels only allow 2 lbs. a.i./A. If there are other registrants who have higher rates, we are not aware of them. Also, “grasslands” is not the same as CRP rangeland, for reasons stated elsewhere in these comments.

10. Page 42, 4th Paragraph, Line 16: Under the section headed by “Assumptions Used in Post-Application Exposure Calculations”, please note that for macadamia nuts, the label specifies “Do not spray by air”. The comment “… although aerial application is also possible” should be removed.

11. Page 45, 1st Paragraph, Line 1: In the first sentence at the top of the page “The lowest MOEs, for trimming/harvesting Christmas trees and harvesting sod……conservative exposure estimate” it should be noted we previously commented on the timing of atrazine application relative to these tasks in this document.

12. Page 74, Table 5: Table 5 indicates a bermudagrass right-of-way rate of 4 lbs. a.i./A, but this is not consistent with Syngenta’s 24(c) labels that list a maximum of 2 lbs. a.i./A.

Anticipated Residues and Acute and Chronic Dietary Exposure Assessments for Atrazine

1. Page 5, 1st Paragraph, Line 4: In the second sentence, “…one was conducted based on a post-emergent application at 3 lbs. a.i./A (1.2X the typical pre-emergent/post emergent 2.5 lbs. a.i./A).” The word “typical” should be revised to “maximum”. The same comment applies to the next part of this sentence as well. Also, comparing a post-emergent treatment to a combination of pre and post-emergent treatments appears to be not appropriate. The rate of 3 lbs a.i./A post-emergence is 1.5X the maximum post-emergence rate of 2.0 lbs. a.i./A.

2. Page 6, 2nd Paragraph, Line 1: “For field corn, BEAD reported that, on average, 82% of the crop was treated, and at a maximum, 97% of the crop was treated with atrazine. As stated earlier in our comments, USDA NASS data for 1997– 1999 shows ~70% of corn acres receives atrazine. This value provides a more accurate average annual value. This same comment applies to the next paragraph that discusses the point estimate for the acute assessment for field corn.

3. Page 10-11, Several Paragraphs: It should be noted that wheat is not listed as a target crop for any registered atrazine products to our knowledge. All data generated by Syngenta for this crop in the past have been for the chemical fallow treatment regimes on our AAtrex formulations. All of these different fallow situations involve application of atrazine to wheat stubble after wheat is harvested. Application only occurs during the first year of the

program, followed by different sequences of rotations to corn, sorghum, and wheat. Therefore wheat is actually a rotational crop only. Page 10, 5th Paragraph, Line 1: BEAD estimates that less than 1% of wheat is treated with atrazine, but in cases where BEAD reports <1% CT HED uses a default value of 1% CT. The USDA NASS report for 1998 shows ~ 60 million acres of all wheat. Thus, the default value of 1% CT means 600,000 acres is assumed to receive atrazine. This is not likely, for an unlabeled crop.

4. Page 12, 1st Paragraph, Line 1: "Macadamia Nuts", What is the source of the estimate that 57% of the crop is treated with atrazine.

5. Page 14, 3rd Paragraph, Line 8: Where the AR (anticipated residues) for acute dietary assessment was discussed, the 97% corn crop treated issue applies. See comment above on per cent of corn acres treated with atrazine. This needs to be recalculated based on more accurate crop treated use estimates of ~ 70%, if NASS values are used.

6. Page 15, Table 4: In Table 4, the percent of crop treated for corn commodities is incorrect. Refer to comment above on per-cent of crop treated.

7. Page 16, 1st Paragraph, Line 3: In the first paragraph below Table 5, it states "The highest %CT is corn at a maximum of 97% CT. Again, refer to other comments on per cent of crop treated.

8. Page 18, Table 6: In Table 6, again, note that the percent crop treated figures for corn (82-97%) need to be adjusted to around 70%. Also the assumption of 100% of the sugarcane crop being treated is not realistic. We will provide updated information on sugarcane use in early 2001.

9. Page 19, Table 7: In Table 7, again, the percent crop treated figures for corn need to be corrected.

10. Page 22, 1st Paragraph: First full paragraph on the page, it was noted that only wheat residue monitoring data was used in the dietary exposure analysis. See comment for page 10-11 above for further explanation of wheat use.

11. Page 40, Attachment 5: Attachment 5 (RDF Files) needs to be reformatted.

12. Page 44, 1st Paragraph, Line 3: In the paragraph headed by "Quantitative Usage Analysis", it is stated that "Atrazine is also used on pineapples, for these crops". Syngenta dropped the use of atrazine on pineapples during the early stages of reregistration for business reasons, declined to provide additional residue data, and requested the tolerance be withdrawn for atrazine.

13. Page 45, Untitled Table: The table does not clarify the source the values. Are the data for a single year or an average of several years. The per cent of crop treated for corn is too high and needs to be corrected to reflect available market surveys. Also, Syngenta is uncertain where the estimates of use on wheat acres were obtained. As noted in several of our comments, wheat is not a target crop, but a rotational crop in chemical fallow situations. Therefore, it is inappropriate to cite it as a registered crop.

14. Page 46, Untitled Table: In the same table as noted for page 45 above, the site “Woodlands” is noted. This is not a registered use for Syngenta, and is not supported by us through data support for re-registration.

15. Page 47, Untitled Table: In the same table, the column under “Lb. AI applied”, for “Wtd Avg.”, it is unclear where these values were derived. Please provide information on derivations of and source of the values

16. Page 48, Untitled Table: In the footnotes to the table, for transparency, the Agency should provide the weighting rationale in detail so the process used is transparent.

Attachment 3

Syngenta's Comments on EPA's November 15, 2000 "Atrazine: HED Product and Residue Chemistry Chapters" (Including the Tolerance Reassessment Summary) and the November 15, 2000 "Atrazine: Anticipated Residues and Acute and Chronic Dietary Exposure Assessments for Atrazine

Response to HED Product and Residue Chemistry Chapters Including the Tolerance Reassessment

Typographical Errors:

1. Page 3, 1st Paragraph, Line 3: Atrazine is not registered for use on wheat. Change "wheat" to "and in wheat fallow programs".

2. Page 33, 1st Paragraph, Line 4: Syngenta does not have wheat labeled as a target crop.

3. Page 34, 1st Paragraph, Line 7 & 9: G-27283 should be G-28273.

4. Page 35, 6th Paragraph, Line 1: The current maximum post application rate is 2 lb ai/A, so the 3 lb ai/A rate used in the metabolism study is 1.5X, not 1.2X. Same comment for sorghum on Page 36 3rd Paragraph.

5. Page 36, 3rd Paragraph, Line 8: "a" should be deleted from between the words containing and several.

6. Page 36, 3rd Paragraph, Lines 7-10: Sentence beginning with "Aminex A-4 chromatography" should be divided into two sentences as follows: "Aminex A-4 chromatography of the residue produced a peak (Peak 7) containing several components, one of which was identified as the lanthionine conjugate of atrazine. Peak 7 was also identified in forage as accounting for ≤11.3% TRR.

7. Page 38, Last Paragraph, Line 3 & 4: GC/ECD should read GC/NPD.

8. Page 39, 1st and 2nd Paragraph, Line 1: GC/ECD should read GC/NPD.

9. Page 41, 1st Paragraph, Line 3: "<" signs for high value in range cited should be deleted.

10. Page 41, 2nd Paragraph, Line 3 & 5: "<" signs for high value in range cited should be deleted.

11. Page 41, 3rd Paragraph, Line 5: "<" signs for high value in range cited should be deleted.

12. Page 41, 5th Paragraph, Lines 8 & 9: "<" signs for high values in ranges cited should be deleted.

13. Page 42, 1st Paragraph (top of page), Line 1 (2 entries): "<" signs for high values in ranges cited should be deleted.

14. Page 42, 2nd Paragraph, Lines 4 & 5: "<" signs for high values in ranges cited should be deleted.

15. Page 42, 4th Paragraph, Line 5: "<" signs for high value in range cited should be deleted.

16. Page 42, 5th Paragraph, Lines 2 & 5: "<" signs for high values in ranges cited should be deleted.

17. Page 42, 6th Paragraph, Lines 3 & 6 (two entries on each line): "<" signs for high values in ranges cited should be deleted.

18. Page 43, 7th Paragraph, Line 9: "triazine" should be replaced with "atrazine."

19. Page 64: Table A: Fallow weed control (and continued control…). The label specifies "may extend into following corn crop…) Also the rates are incorrect for this wheat-corn-fallow use; The table lists ND and SD use >7.5 pH is 1.5 lbs. maximum, not the 1.4 listed, and the <7.5 pH maximum is 2.0 lbs. not the 1.8 listed.

20. Page 64: Table A: Guava: Maximum number of applications per season is listed as 8.0 when the label says "Do not apply more frequently than at 4-month intervals". This should be changed from 8 to 3 applications.

Comments with Regard to Content and Conclusions of the Product Chemistry Chapter:

1. Page 21, footnote 16; The footnote states "An enforcement analytical method must be submitted for a new impurity identified on the revised CSF (9-20-94)." Please note the current CSF for Syngenta Atrazine Technical is dated 3-18-99 and was approved by EPA on 9-16-99. In the CSF, the "new" impurity is not new, it is cyanazine. Cyanazine was listed to cover possible cross-contamination at the manufacturing plant. However, cyanazine is no longer being produced, so it can be dropped as an impurity, and a new method is not needed.

Comments with Regard to Content and Conclusions of the Residue Chemistry Chapter:

1. Page 35, 5th Paragraph (Nature of the Residue in Plants): The description of the metabolism of atrazine in plants should be modified to include glutathione conjugation as part of the overall metabolic pathway. Lines 4 and 5 would be more accurate with the following modification: "Atrazine undergoes extensive metabolism in plants including: N-dealkylation to form the chloro metabolites G-30033, G-28279 and G-28273; hydroxylation of parent or chloro metabolites to form G-34048, GS-17792, GS-17791, and G-17794; and glutathione conjugation by displacement of the 2-chloro moiety. Rearrangement and dealkylation of thio-conjugates or amination of parent or

G-30033 forms CGA-101248." The remainder of the paragraph should remain the same "Lanthionine, lanthionine sulfoxide and glutamine conjugates…".

2. Page 39, 1st Paragraph, Last Sentence: Method 484 (MRID 40431365) has previously been submitted to the Agency.

3. Page 39, 6th Paragraph, Last Sentence: The Agency is requesting an analytical method for all four hydroxy atrazine metabolites. Based on metabolism study results in corn, sorghum and sugarcane, only the hydroxy atrazine (G-34048) and desethylhydroxy atrazine (GS-17794) are found in a quantity which would be measurable by an enforcement method with an LOQ of 0.01-0.05 ppm. Thus only those two moieties should be included in a tolerance enforcement method, since only they would be measurable.

4. Page 42, 6th Paragraph, "Wheat": In the June 29, 1995 memorandum written by John Abbotts to Venus Eagle, Joseph Bailey, and Kathryn Boyle in response to previous reviews and the reregistration Data Call-In of 10/90, the Agency recommended under conclusion 3 that a radiolabeled field residue study in fallow/wheat which determined the ratio between combined residues of parent and chloro metabolites to total triazine residues would satisfy the magnitude of the residue requirement for wheat. According to this conclusion, determination of this ratio in hay should also satisfy the requirement for the magnitude of the residues in hay in lieu of an additional residue program for atrazine and metabolites in hay as outlined in this residue chapter.

5. Page 43, 7th Paragraph: In the case of sugarcane processing, the Agency has concluded that the submitted processing study (MRID 43160504) was inadequate because only a 2X exaggerated rate (20 lb a.i./A) was applied. While a 5X (50 lb a.i./A) rate would normally be required, the label for both the AAtrex 4L and Nine-O products clearly indicate that applications in excess of 10 lb a.i./A may result in crop injury. A 50 lb a.i./A treatment rate will almost certainly result in crop injury and compromise the study.

6. Page 50, Last Paragraph, Rotational Crops: Limited field trials can be conducted on the Foliage of Legume Vegetables Crop Group to set tolerances after the Agency reviews a draft protocol, since the requested study for limited trials in a single crop group is not a guideline study.

Comments with Regard to the Tolerance Reassessment Summary

1. Page 58, Table C. Milk: The Agency has proposed a reassessed tolerance in milk of 0.10 ppm. The previous milk tolerance was set at 0.02 ppm based on parent atrazine only. It is unclear how the Agency arrived at the 0.10 ppm (value). Metabolism and residue data and methodology submitted by Syngenta (formerly Novartis) should lead to the conclusion that the tolerance should remain at 0.02 ppm. The analytical Lower Limit of Method Validation (LLMV) of Analytical Method AG-496A is 0.01 ppm per each

chloro-triazine analyte. There were no detectable residues in USDA's Pesticide Data Program (PDP) database at an average Limit of Detection (LOD) of 0.0075 ppb. In addition, the Agency used a value of 0.005 ppm for milk in their dietary exposure assessment based on theoretical dietary burden calculations. Based on the Agency's dietary burden calculations and the results from a recently submitted 3-level feeding study in lactating cattle which was conducted to determine the transfer of ^{14}C-atrazine residues to milk (MRID 43934412), an estimated total triazine residue level of less than 1 ppb would occur in milk. Thus, the current tolerance value of 0.02 ppm should be more than adequate for milk.

Response to Anticipated Residues and Acute and Chronic Dietary Exposure Assessments

Typographical Errors

1. Page 2, 2nd Paragraph, Line 4: "sugar cane" should read "sugarcane" throughout the document

2. Page 9, 1st Paragraph, Line 2: Two MRID numbers were repeated (1994; MRIDs 43395504 and 43395504).

Comments with Regard to Content and Conclusions of the Exposure Assessments:

1. Page 5, 4th Paragraph, Lines 2, 3: The 70:30 pre- and post emergence ratio was correctly derived from the 1997 survey data. However, more recent survey data (1998 and 1999) indicates that this ratio can change slightly.

2. Page 6, 3rd Paragraph: It is unclear how BEAD calculated "average" and "maximum" percent of crop treated and the values obtained for corn. Please provide the sources of data and weighting process for percent crop treated.

3. Page 7, 2nd Paragraph: In order to be consistent with the chloro residue value calculation in corn, the adjustment for the percent of pre-emergence use vs. post-emergent use (70:30 or 64:36) should be applied to the calculations for determination of the levels of hydroxy metabolites.

4. Page 9, 3rd Paragraph, Line 1: The Agency used a residue value of 0.031 ppm for the combined hydroxy metabolites in sugarcane molasses. Based on the results of the processing study performed as part of the magnitude of the residues in sugarcane (MRID 43160504) the hydroxy-metabolites, G-34048 and GS-17794, were present at values of < 0.02 ppm (LLMV) and at 0.02 ppm (LLMV) respectively. Using ½ LLMV for G-34048, the combined residues of the two hydroxy triazines in sugarcane molasses is 0.03 ppm.

5. Page 10, Wheat: Atrazine use in wheat fallow programs is limited to application on fallow ground with wheat being planted at least a year later.

Based on the use pattern and studies conducted with ^{14}C-atrazine, no parent atrazine residues would be anticipated as a result of the label use.

6. Page 10, 1st Paragraph, Line 6: The Agency states that "No metabolism study had been performed on wheat…". However, Syngenta submitted a metabolism study in which wheat was grown as a rotational crop following corn and sorghum (MRID 43016505). This study mimics the actual use of atrazine as a fallow application prior to planting wheat. A radiolabeled magnitude of the residue study is currently in progress and will be completed and submitted to the Agency in early 2001.

7. Page 12, 3rd Paragraph, Line 4: The Agency indicates that a tolerance of 0.05 ppm in guava was used in the dietary assessment. The anticipated guava residue value in EPA's PD-1 document ("The Triazine Herbicides, Atrazine, Simazine and Cyanazine, Position Document 1, Initiation of Special Review" (PD-1) from the U.S. Environmental Protection Agency, dated November 9, 1994.) is 0.01 ppm and this value was used in all recent Syngenta assessments.

8. Page 15, 3rd Paragraph, Lines 3 and 4: The Agency states that the "…highest residues were 1.11 ppm and 0.221 ppm…". Please provide the method used to calculate these values.

Attachment 4

Syngenta's Comments on EPA's November 30, 2000 "Atrazine. HED's Preliminary Human Health Risk Assessment for the Reregistration Eligibility Decision (RED)" and the October 20, 2000 "Drinking Water Exposure Assessment for Atrazine and Various Chloro-triazine and Hydroxy-Triazine Degradates"

Surface Water

A probabilistic analysis with diet and water in high exposure to CWS is provided as a separate report in this submission (Attachment 8). Based upon this higher tier analysis it is concluded that the total chloro-triazine residues in drinking water do not pose a risk to individuals drinking water from the CWSs with the highest total chloro-triazine concentrations.

Methodology Corrections:

In calculating the Seasonal and Annual Means, EPA developed regression equations to calculate total chloro-triazine levels from measured atrazine concentrations using only the finished water levels ("Drinking water exposure assessment for atrazine and various chloro-triazine and hydroxy-triazine degradates" dated October 20, 2000 pages 13-14). Syngenta's approach was to develop the equations based on both raw and finished water and believe that this is the best approach since many other Community Water Systems do not treat their water. While all of the chloro-triazines behave similarly with many water treatment processes, Syngenta believes that raw data correlation should also be considered in developing the quarterly equations. The Syngenta equations using both raw and finished water are as follows:

1st qtr $y = (0.813 \pm 0.060)x + (0.145 \pm 0.053)$ ($R^2 = 0.614$, n = 118, df =116)

2nd qtr $y = (0.311 \pm 0.018)x + (0.303 \pm 0.076)$ ($R^2 = 0.617$, n = 182, df =180)

3rd qtr $y = (0.594 \pm 0.035)x + (0.360 \pm 0.075)$ ($R^2 = 0.643$, n = 162, df =160)

4th qtr $y = (0.803 \pm 0.064)x + (0.103 \pm 0.084)$ ($R^2 = 0.569$, n = 120, df =118)

For the existing atrazine annual means provided in the PLEX database, EPA applied the annual regression equation to estimate total chloro-triazine annual means for the CWS in PLEX. Instead the four quarterly regressions should have been applied to the individual atrazine data points within each quarter to determine individual total chloro-triazine concentration for each sample.

Estimated seasonal and annual mean water concentrations included in the EPA preliminary assessment for VMS and ARP datasets were calculated by using the EPA quarterly equations to calculate total chloro-triazine residues followed by a simple averaging of the residues over a timeframe. Syngenta strongly believes that time weighting of the residue concentrations should be used, particularly for the Voluntary Monitoring Study (VMS) and the Acetochlor Registration Partnership (ARP) data sets, where samples have been taken more frequently during the use season and there are generally several samples in a quarter. In addition, when data exists for a CWS in multiple data sets (i.e., PLEX, ARP, VMS), these data sets should be combined before determining exposure. The sum of all data adds to the understanding of time dependent variability leading to a more robust and defendable assessment of exposure.

The use of the maximum seasonal or annual means should only be used to assess exposure for those time frames, i.e. 90 or 365 days, respectively. They should not be used to establish long term exposure levels at CWS, where data exist over a longer, more appropriate, time frame. Since these data sets generally contain residue levels over a period of several years, an appropriate highest period mean covering the exposure period being addressed should be used where possible for chronic exposure assessments. This would greatly improve the validity of the exposure assessment presented in the EPA preliminary risk assessment. Additionally, the comparison of the 3-month average concentration to a DWLOC based on a chronic toxicology endpoint is not appropriate.

Included in Attachment 7 are total chloro-triazine estimates (using monthly averages) from each of the three databases for the 25 CWSs in Table 14 of EPA's preliminary assessment and the CWS in the highest concentrations included in Appendix E of the preliminary assessment.

To assess exposure more accurately using a deterministic approach, Syngenta has combined the three data sets (VMS, ARP, and PLEX) for the 25 CWS mentioned in EPA's review as well as those listed in Appendix E. A time weighting of each data point was then performed by assigning the residue value of a sample to each day going back one half of days to the previous sample date and forward one half of the days to the next sampling date. The time-weighted mean was then determined by adding the residue values for each day and dividing by the number of days in the period being determined. This result of this process was that several of the systems had 40 to 50 samples per year which gives better distribution of sampling events than the 20 to 30 in either ARP or VMS programs alone and provides for better characterization of exposure.

The resulting exposure assessments even using a deterministic methodology indicated that five CWS had time weighted annual means over the 12.5 ppb preliminary chronic level proposed by EPA for infants <1 year old using the new OW body weights, a 1000 fold safety factor, and an endpoint derived from LH surge suppression in sexually mature adult rats (see Table 1 below). These CWS are Dearborn, MO (14 ppb), Hettick, IL (20 ppb), Palmyra-Modesto, IL (15 ppb), Salem, IL (14 ppb) and Shipman (20 ppb). None of these exceed the DWLOC for infants <1 year (90 ppb) determined by using a more appropriate toxicology endpoint and a 1000 fold safety factor. These 5 CWS serve a combined population of 12,000 people. None of the CWS had 5 year period means over 18 or 23 ppb (EPA calculated DWLOC values) for children 1-6. It should be noted that Shipman no longer provides drinking water from the source monitored. In 1999, it switched its water source to another surface water CWS, Alton, Illinois and the annual means have dropped well below any of the calculated DWLOCs. The period mean for Shipman for 1993-1999 is 6.58 ppb chloro-triazines.

A probalistic exposure assessment using the same composite database is included in this submission to assess risk from diet and water in the high exposure CWS (see Attachment 8).

Based upon this analysis it is concluded that the total chlorotriazine residues of atrazine in diet and drinking water do not pose a risk to individuals drinking water from the CWSs with the highest total chlorotriazine concentrations.

Specific Comments on Preliminary Human Health Assessment:

1. Page 11, 3rd Paragraph, Line 6: In the list of 25 CWS, Iberville and Chariton (both listed in IL) are actually located in LA and IA, respectively.

2. Page 66: The population served by the Higginsville, MO CWS, as noted in PLEX was 4,700 not 10,000 as listed in Table 11.

3. In Appendix E the following items identified "Gerome", IL should be Jerome, IL.

4. The seasonal (3 month) means for Illinois CWS in the 1993 VMS as presented in Table 14 are based on one sample in June and was not calculated based on weekly concentrations from May to July (page 58). The VMS program was initiated in June, 1993.

5. Page 61-62 (Table 11); the chloro-triazine seasonal mean concentration of 22.29 ppb is incorrect. The highest seasonal mean in the composite database for Higginsville in 1996 is 2.29 ppb.

6. White Hall, IL switched from surface water to a ground water source in 1997. The annual atrazine mean form groundwater was 0.48 ppb and 0.50 ppb, in 1998 and 1999 respectively. The total chloro-triazine period mean was 3.66 ppb.

7. Replace atrazine with total chloro-triazine in the following sections:
   Page 70: 1st Paragraph: Line 9
   Page 86: 5th Paragraph: Line 5
   Page 87: 1st Paragraph: Line 1
   Page 89: 2nd Paragraph: Multiple statements
   Page 91: 6th Paragraph: Line 2

8. Page 86: 1st Paragraph: Line 2: Replace variously 0.12% with variously 0.05%.

9. Replace measured with calculated or estimated
   Page 89: 2nd Paragraph: Line 7
   Page 90: 2nd Paragraph: Line 5

In reviewing the EPA equations presented on page 13 of Henry Nelson's "Drinking water exposure assessment for atrazine and various chloro-triazine and hydroxy-triazine degradates" dated October 20, 2000 the value for n differs from the Syngenta data set submitted to EPA. The equations derived using just finished water samples in the data set are presented below:

EPA Equations

1st qtr $y = (0.535 \pm 0.137)x + (0.223 \pm 0.096)$ (Fig 3-3; $R^2 = 0.502$, n = 59, df = 57)

2nd qtr $y = (0.394 \pm 0.051)x + (0.107 \pm 0.108)$ (Fig 3-4; $R^2 = 0.710$, n = 94, df = 92)

3rd qtr $y = (0.704 \pm 0.165)x + (0.123 \pm 0.180)$ (Fig 3-5; $R^2 = 0.482$, n = 77, df = 75)

4th qtr $y = (0.630 \pm 0.137)x + (0.122 \pm 0.124)$ (Fig 3-6; $R^2 = 0.582$, n = 61, df = 59)

Correct Equations consistent with the finished water data set and n values

1st qtr $y = (0.535 \pm 0.141)x + (0.223 \pm 0.099)$ ($R^2 = 0.502$, n = 59, df =57)

2nd qtr $y = (0.402 \pm 0.050)x + (0.083 \pm 0.106)$ ($R^2 = 0.740$, n = 91, df =89)

3rd qtr $y = (0.661 \pm 0.167)x + (0.156 \pm 0.181)$ ($R^2 = 0.439$, n = 81, df =79)

4th qtr $y = (0.627 \pm 0.142)x + (0.126 \pm 0.130)$ ($R^2 = 0.576$, n = 60, df =58)

Table 1

Community Water System	State	EPA Review Highest Residue Found (ppb)	EPA Review Highest Annual Average (ppb)	Syngenta Highest Annual TWM for Combined Data (ppb)	Syngenta Period TWM for Combined Data (ppb)
Shipman	IL		24.8	20.5	6.6
Hettick	IL		22.9	19.1	8.4
Palmyra-Modesto	IL		18.5	15.0	4.7
Salem	IL	89	20.4	14.2	3.9
Dearborn	MO		14.3	13.8	4.3
Sardinia	OH	55.2	15.0	11.5	2.8
White Hall	IL		12.1	10.9	3.7
Holland	IN			10.2	2.8
Paris	IL	18.7		10.2	3.0
Gillespie	IL	69.1	12.6	9.4	3.7
Scottsburg	IL			9.3	2.6
Vermont	IL	17.3		9.1	2.3
Higginsville	MO			9.1	2.8
Osawatomie, Miami Co RWD #3	KS	17.3		9.0	3.3
Batesville	IN			8.5	3.8
Farina	IL			8.3	4.6
Bucklin	MO			7.5	1.8
Adrian	MO	22.9		7.0	1.7
ADGPTV	IL			7.0	3.5
Keysport	IL	18.7		6.9	4.0
West Salem	IL			6.7	3.9
Sorento	IL			6.7	2.9
Hillsboro	IL		12.2	6.1	3.0
Centralia	IL			6.1	3.3
Springfield	IL	20.1		5.9	2.4
Lake of the Woods, Sunbury	OH	18.1		5.8	4.0
Chariton	IL		2.0	5.8	2.3
Delaware	OH	19.8		5.8	3.2
Carlinville	IL			5.6	2.5
Wayne City	IL			5.6	1.6
North Vernon	IN			5.5	2.2
Iberville	LA			5.3	3.2
Vandalia	MO			5.0	2.8
Louisville	IL	24.3		5.0	3.5
Butler	MO	18.7		4.5	1.4
Kinmundy	IL			4.3	2.5
Clay City	IL	18.7		4.3	1.8
Three Rivers	IN	20.1		4.0	1.3
Flora	IL			3.8	2.6
Waverly	IL			3.8	2.7
Newark	OH	29.7		3.5	1.5
Napoleon	OH	17.9		3.3	2.5
McClure	OH	20.1		2.1	1.7

Groundwater Comments

HED's Preliminary Human Health Risk Assessment

1. Page 10, 12, 67: In the Rural Well Survey conducted by Ciba-Geigy Corporation during the period from September 1992 to March 1995, 8 out of the 1505 total surveyed wells (0.53%) had atrazine concentrations ≥3 ppb, i.e., the first 8 wells in Table 2 (17491-KS-017, 17491-KS-068, 17491-MN-003, 17491-WV-033, 17491-IN-050, 17491-WI-080,17491-WI-045, 17491-WI-060). Six wells (0.40%) including 2 wells in the 8 highest atrazine wells (i.e. 17491-WI-045 and 17491-WI-060) exceeded the total chloro- atrazine 12.5 ppb, the chronic DWLOC for infants based on the new body weights recommended by EPA Office of Water (OW). Two wells had total chloro-triazine residues approaching 12.5 ppb (i.e., 17491-WI-092 and 17491-WV-019). However, only one well (0.066% of the total) in the entire survey (17491-WI-045) was slightly exceeding the EPA HED proposed total chloro-triazine chronic DWLOC (18 ppb) for infants.

   Follow-up investigation, by Ciba-Geigy Corporation, of the 8 wells with the highest atrazine detections indicated that point source contamination might have contributed to the higher than expected concentrations of atrazine. Among the 8 wells, two were not used for drinking water. The deethylatrazine to atrazine ratios (DAR) in 8 wells were all significantly below unity (Table 2), indicating that the parent atrazine might have moved to ground water preferentially from point sources (Adams, C.D., and E. M. Thurman. 1991: Formation and Transport of Deethylatrazine in the Soil and Vadose Zone. J. Environ. Qual. 20:540-547). Under normal leaching conditions, atrazine degrades to DEA resulting in a larger DAR when residues are found in ground water. DAR values should be larger than unity because deethylatrazine is the primary degradation product of atrazine and has a lower soil Koc relative to the parent.

   For the 8 highest total chloro-triazine wells (two approaching 12.5 ppb), one was not a drinking water well and three had no recorded use of atrazine at least for 5 years prior to the sampling dates in the area where the wells were located (Table 2).

   Since the majority of the sampling activities for the concerned wells listed in Table 2 took place during 1992 to 1993, the beneficial effect from the last major use rate reduction and label improvements of atrazine during the 1993 season and thereafter was probably not fully reflected in this study. For example, subsequent sampling and analysis of the 2 wells in PA showed significant reduction in the concentration of atrazine plus its chlorinated metabolites, decreasing total concentration from 14 and 15 ppb to 7.6 and 6.8 ppb, respectively. The two WI wells, 17491-WI-084 and 17491-WI-092, showed reductions in atrazine concentrations from 2.3 and 1.0 ppb in 1992 to 0.32 and 0.58 in 1996, respectively. In these same wells, the total chloro-triazines were reduced from 13 and 12 ppb to 3.13 and 3.71 ppb, respectively during the same time period. Given that the survey was

designed with well selection criteria strongly biased toward worst-case atrazine detections such as 1) previous history of detect(s), 2) high hydrogeological vulnerability, and 3) proximity to field with atrazine application history, the rural well data are not appropriate for a population-based regional/national scale drinking water assessment.

Table 2

Well ID	County	Sampling Date	Atrazine (ppb)	Total chloro- (ppb)	DAR	Well Use	Year Well Bored	Well Depth (ft)	Distance to Field (ft.)	Atrazine Last Used	Years Used
Wells exceeding 3 ppb atrazine but less than 12.5 ppb total chloro-triazine											
17491-KS-017	Harvey	06/14/94	5.1	6.2	0.12	OTH	1976	35	75	1994	90-94
17491-KS-068	Washington	11/30/94	3.8	4.5	0.16	D/O	1977	78	150	1991	90-91
17491-MN-003	Winona	08/23/93	3.4	5.6	0.41	D/O	1940	285	70	1993	93
17491-WV-033	Jefferson	09/13/93	4.2	6.3	0.24	OTH	1960	160	2640	1993	89-93
17491-IN-050	Jasper	8/19/93	9.1	11	0.15	DOM	1963	18	150	1992	90, 92
17491-WI-080	Dane	11/24/92	4.3	6.4	0.28	DOM	1920	60	Unk	1989	89
Wells exceeding both 3 ppb atrazine and 12.5 ppb total chloro-triazine											
17491-WI-045	Sauk	10/13/92	12.0	19	0.39	DOM	1972	150	50	1988	88
17491-WI-060	Sauk	10/28/92	7.0	13	0.67	DOM	1952	95	40	Not	Not
Wells exceeding or approaching 12.5 ppb total chloro-triazine but less than 3 ppb atrazine											
17491-WI-084	Richland	12/1/92	2.3*	13*	2.00	DOM	1986	46	850	Not	Not
17491-WI-092	Dodge	12/7/92	1.0**	12**	2.50	DOM	Unk	75	100	NA	NA
17491-WV-019	Jefferson	8/9/93	0.96	12	3.44	DOM	1978	140	80	1993	89-93
17491-WV-039	Jefferson	9/14/93	0.69	14	3.77	OTH	1955	20	300	1993	89-93
17491-PA-105	Franklin	6/28/93	1.4	15	3.57	D/O	1960	240	15	1993	89-93
17491-PA-106	Franklin	6/28/93	1.7	14	2.76	DOM	1943	160	35	Not	Not

DAR = Deethylatrazine to Atrazine Ratio; D/O = Domestic or Other; DOM = Domestic; OTH = Other.
Atrazine Last Used = Year atrazine was last used at the sampling location.
Years Used = Years atrazine was used in the five years preceding the time of sampling at sampling location.
Not = Atrazine not used.
NA = No information available on atrazine use.
* Concentrations reduced to 0.32 ppb for atrazine and to 3.13 ppb for total chloro-triazine after resampling August 5, 1996.
** Concentrations reduced to 0.58 ppb for atrazine and to 3.71 ppb for total chloro-triazine after resampling August 6, 1996.

2. Page 53 & 54: Seasonal mean concentrations should not be used for comparison to chronic DWLOC values because the chronic DWLOCs were derived based on longer duration of daily exposure.

Drinking Water Exposure Assessment

3. Page 81: Table 8-1 provided percentile values of atrazine in ground water based on ARP Groundwater Monitoring Study for the period from May 1995 to March 1998. We could not verify the accuracy of the table because we do not have access to the ARP data.

4. Page 88: Eight wells (out of 1,505 wells sampled in the Rural Well Survey) had atrazine concentrations exceeding the MCL of 3 ug/L. As in the discussions above, follow-up investigations for the eight wells shown high possibility of point source contamination causing the detection of relatively high atrazine concentrations in these wells.

5. Page 89: Only one well (out of 1505 sampled in the Rural Well Survey) had a total chloro-triazine concentration exceeded the HED proposed sub-chronic/chronic DWLOC of 18 ppb for the chronic exposure of children and infants. As indicated in the follow-up investigation, this well likely had a point source contribution to the detection of high atrazine concentration (>3 ppb). Among the 6 wells with atrazine < 3 ppb but with total chloro-triazine greater than or approaching 12.5 ppb, some of the wells had re-sampled results showing both reduced atrazine and total chloro-triazine concentrations far below 12.5 ppb (e.g., 17491-WI-084 and 17491-WI-092). The source of the high chloro-triazine metabolite concentrations in the other wells are possibly due to historical point source contamination in these areas.

   Finally, results from the National Alachlor Well Water Survey (L. Holden and J. Graham et. al., Environ. Sci. Technol., Vol. 26, No. 5, 1992, 935-943) indicated that the MCL exceedance frequency of atrazine in private, rural domestic wells was less than 0.1% which is 5 times lower than the results from the Ciba Rural Well Study (i.e., 0.5%). The National Alachlor Well Water Survey was conducted in 1987-1989 with a statistically designed sampling method for well selection to represent approximately 6 million private rural wells in corn and soybean production areas in the United States. The Ciba/Syngenta PLEX update IV also contains information on atrazine detection in rural non-community system wells in 21 major atrazine use states. The PLEX information indicated that atrazine was detected above 3.0 ppb in only 0.15% of private rural wells (25 out of 16,382) which is very similar to the results from the National Alachlor Well Water Survey.

Comments on the Agency's Citation of the Laboratory, Aerobic Soil Metabolism Half-Life Values

In the Agency's October 20, 2000 document entitled "Drinking Water Exposure Assessment for Atrazine and Various Chloro-triazine and Hydroxy-triazine Degradates," the EPA notes on page 6 that the aerobic laboratory half-life value of atrazine is 3 to 4 months. This half-life value is further noted to have been derived from "…several aerobic soil laboratory studies…" However, the reference(s) for these studies is not provided.

In February 1994, Ciba-Geigy Corporation (now Syngenta Crop Protection, Inc.) was notified in a "Grassley-Allen" letter from the EPA that the Agency was considering initiation of a Special Review of the major triazine herbicides (atrazine, cyanazine, and simazine) based upon potential human health and ecological effect concerns. On November 23, 1994, the EPA began the Special Review by publishing "Atrazine, Simazine And Cyanazine; Notice of Initiation of Special Review" in the Federal Register (EPA, 1994). This notice indicated that even though ecological effects were not a trigger in the Special Review, which was based upon human health concerns at that time, the EPA was nonetheless concerned about atrazine residues "…because they may have the potential to cause effects on aquatic organisms and terrestrial plants and their ecosystems."

To address the concerns of the EPA, and to respond to the request for additional information, Syngenta formed a multi-disciplinary expert panel to conduct a comprehensive and updated ecological risk assessment of atrazine. The assessment would build upon the existing atrazine ecological risk assessments (Solomon, et al., 1996; Fairchild, et al., 1994) incorporating data collected through 1999. The panel, named the Atrazine Ecological Risk Assessment Panel, was comprised of ecotoxicologists, environmental chemists, and modelers from academia and independent consulting organizations in the United States and Canada. In response to the needs of the Panel, Syngenta conducted a review of pertinent physicochemical and environmental data of atrazine to provide the Panel with a more accurate and reliable data to be used for higher tier modeling of atrazine. The Panel's report (Giddings, et al., 2000) summarized the environmental fate data on atrazine based on extensive literature search and review of in-house data available from Syngenta. The following information concerning the aerobic soil metabolism of atrazine is excerpted from the Panel's report.

Aerobic Soil Metabolism Half-Life Value (Laboratory)

Extensive research has been performed over the past thirty plus years to determine the fate and persistence of atrazine. Approximately seventy references, including studies available in the public domain, summaries, books, and unpublished studies, were evaluated for potential data on the transformation of atrazine. Research performed on soil in a controlled, laboratory environment under similar experimental conditions was the focus of the search. Six studies, representing ten unique atrazine half-life values, were considered representative of the dissipation of atrazine. These values are presented in Table 3. Numerous studies were not considered for the following reasons;

extremes in experimental conditions, e.g., temperature and soil moisture; the soil was fabricated in the lab (vs. field collected); the soil was amended with bacterium or an energy source; the study was an outdoor, field study; or, the analytical procedure, extraction method, and/or, detection limits did not generate acceptable results. The half-life values in Table 3 ranged from 20 to 146 days with a mean value of 44 ± 38.6 days.

If two or more laboratory values are available, the USEPA uses the following equation to calculate a conservative half-life value for use in exposure modeling (USEPA, 1995):

(Equation 1) $t_{1/2}$ (days) = $x + t_{90}[\sigma/(n)^{1/2}]$

in which $t_{1/2}$ is the half-life in days used in the model, x is the sample mean in days, t_{90} is the *t*-test value at 90% confidence, σ is the sample standard deviation, and *n* is the sample size. Calculations are performed on the half-life as opposed to the rate constant (day^{-1}). The resultant approaches the mean as the sample size increases. Decay rates in surface soils were calculated using reported aerobic soil metabolism half-lives for the ten values summarized in Table 3. Using the t-test equation, the aerobic soil metabolism half-life was estimated as 61 days.

Summary

Syngenta Crop Protection recommends that EPA use the mean aerobic soil metabolism half-life value of 61 days that was reported by the Atrazine Ecological Risk Assessment Panel in their Expert Panel Report. Syngenta requests the use of this value instead of the value noted in the Agency's October 20, 2000 document entitled "Drinking Water Exposure Assessment For Atrazine And Various Chloro-triazine And Hydroxy-triazine Degradates."

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Table 3. Aerobic Laboratory Soil Metabolism

SOIL TEXTURE CLASS	SOIL SERIES	SOIL ORIGIN	% SOIL MOISTURE[a]	SOIL PH	% SOIL OM	STUDY TEMP (°C)	STUDY RATE (PPM)	HALF-LIFE (DAYS)	REF.
Sandy Loam	Hanford	CA	12	6.05	0.74	25 ± 1	10	26.6	Singh, 1990
Loamy Sand	Tujunga	CA	4	6.3	0.57	25 ± 1	10	22.9	Singh, 1990
Silt Loam	Falaya	TN	80 (FMC @ 1/3 bar)	5.5	0.66	25	5.6	21	Winkelmann, 1991
Silt Loam	Falaya	TN	80 (FMC @ 1/3 bar)	5.5	0.66	25	1	20	Winkelmann, 1991
Sandy Loam	Cape Fear	NC	80 (FMC @ 1/3 bar)	5.3	5.1	21 ± 2	1	59.3	Blumhorst, 1994
Loam	Les Evouettes	Switzerland	75 (FMC @ 1/3 bar)	6.8	6.38	20	10	56.4	Abildt, 1991
Loam	NR	CA	75 (FMC @ 1/3 bar)	7.6	1.4	25 ± 1	10.2	146	Nelson, 1991
Silty Loam	NR	Germany	60 (MWHC)	5.1	2.2	25	5	39.4	Qiao, 1996
Silty Loam	NR	Germany	60 (MWHC)	7.6	1.8	25	5	24.9	Qiao, 1996
Sand	NR	Germany	60 (MWHC)	4.1	3.8	25	5	23.8	Qiao, 1996
							Mean:	44	
							Std. Dev.:	38.6	
							N:	10	
							Median:	25.8	

[a] Soil moisture during incubation.
FMC = Field Moisture Capacity.
OM = Organic Matter.
MWHC = Maximum Water Holding Capacity.
NR = Not reported.

Attachment 5

Syngenta's Comments on EPA's November 15, 2000 "Occupational and Residential Exposure Assessment and Recommendations for the Reregistration Eligibility Decision Document for Atrazine"

Overall Comments on: Occupational and Residential Exposure Assessment and Recommendations for the Reregistration Eligibility Decision Document for Atrazine

The “Standard Operating Procedures (SOPs) for Residential Exposure Assessment” revised December, 1999 document is referenced several times in this document, yet this revised document has not been available to the public or to Syngenta. Additionally there are numerous references (such as in Table 15) to the SOPs for Residential exposure Assessments dated 12/97. Please provide the December 1999 document and clarify which version of these SOPs are used in the assessment.

For several exposure scenarios in the preliminary risk assessment Syngenta has provided information on agricultural practices that show revisions should be made in the assumptions on acreage treated. Syngenta has not had the opportunity to review the document cited in Tables 3, 5, 6, 9, and 10. Exposure SAC Policy #9 *"Standard Values for Daily Acres Treated in Agriculture*" revised June 23, 2000. We respectfully request a copy of this document for review.

Syngenta has recommended that only short-term risks should be calculated since intermediate-term risks are not likely. Syngenta has not had the opportunity to review the documents cited in Tables 10 and 16b, 2 EPA draft memos, dated October 19, 2000 "*Exposure of Professional Lawn Care Workers During the Mixing, Loading and Application of Granular Turf Pesticides Utilizing a Surrogate Compound*" and "Exposure of Professional Lawn Care Workers During the Mixing and Loading of Dry and Liquid Application of Turf Pesticides Utilizing a Surrogate Compound". We respectfully request a copy of these documents for review.

Syngenta has also not had an opportunity to review a document cited as the source used to determine transfer coefficients in Tables 12, 13 and 14, Science Advisory Council for Exposure Memo # 003.1 "Agricultural Transfer Coefficients," revised - August 7, 2000. We respectfully request a copy of this document for review.

Additionally, with our comments on the occupational and residential risk assessment error correction Syngenta is submitting a paper supporting our position on hand to mouth exposure from turf treated with atrazine.

Summaries of the EPA estimates of the Occupational and Residential Exposure Risks should be revised based on the information provided in the Detailed comments below.

Detailed Comments on: Occupational and Residential Exposure Assessment and Recommendations for the Reregistration Eligibility Decision Document for Atrazine

1. Page 1. Hazard Identification: The toxicological endpoint selections are not reflective of the corresponding exposure duration. See the Toxicology Chapter response (Attachment 1).

2. Page 2, Paragraphs 2 and 3: The Incident data used in the EPA risk assessment has not been available for Syngenta's review. Comments will be made after receipt of this information.

3. Page 4, 2nd Paragraph, Line 8: Syngenta disagrees with the maximum acres used by EPA for aerial application (See Comment 9 below).

4. Page 4, 4th Paragraph, Line 3: Trimming/harvesting of Christmas trees occurs several months after application (see Comment 9 below) and there is a 30 day restriction on sod lifting. Therefore the use of short term dislodgeable foliar residues is inappropriate.

5. Page 5: 1st Paragraph: The summary of residential handler exposure and risk estimates states that there are some scenarios that have short-term risks of concern; this contradicts the information displayed in Table 16a and discussed on page 45. When the PHED data for hose-end and low-pressure hand-wand data are used, the MOEs are below 1000. However, when using the higher quality, larger database of ORETF data, the MOEs are well above 1000. This higher quality data, which was submitted to EPA in November, 1999, by the Outdoor Residential Exposure Task Force, should be used to assess exposure to residential handlers. This is acknowledged by EPA on page 45 under "Residential Handler Exposure Scenarios - Data and Assumptions, 1st Paragraph, Line 4: "The recently submitted ORETF exposure study data for push type granular spreader and hose-end sprayer had greater numbers of replicates and therefore greater statistical power than studies previously used in PHED. Therefore, in the absence of atrazine-specific data, the ORETF data will be used for these two scenarios." In light of this conclusion, only the highest quality data should be used to assess risks to atrazine; the statement that two use scenarios (hose-end spray and low pressure hand-wand) are of concern on page 5 is inaccurate and should be revised.

6. Page 5, 2nd Paragraph, Line 1: The post-application risks to liquid-treated turf are summarized, but the post-application risks to granular fertilizer treated turf are missing. These should be summarized here, too. Also, please specify that acceptable MOEs exist for adults golfing and mowing <u>on both liquid treated and granular treated turf</u>; currently the type of formulation is not stated. Also, please specify the formulation types that result in acceptable MOEs for incidental turf mouthing and soil ingestion.

7. Page 5, 4th Paragraph, Line 2: In the second sentence, please specify that the comment is short-term dermal for liquid treated turf.

8. Page 6, 4th Paragraph, Line 1: The application of atrazine onto dry fertilizer is a highly mechanized and specialized process that requires large-scale commercial equipment, and does not occur "on-farm". The reference to on-farm treatment should be deleted from the risk assessment. Syngenta will submit a document in January that details the herbicide/fertilizer application process so that the risks can be more accurately assessed.

9. Page 6, 4th Paragraph, Line 4: In response to EPA's request for more information regarding atrazine spray practices and post-application activities on conifer forests and tree farms, Syngenta contacted Dr. Michael Newton from the Forest Science Department, Oregon State University, College of Forestry, Corvallis, Oregon. The information he provided is representative for the primary forestry states of Oregon, Washington, and, California. Additionally Syngenta obtained expert information on management of southern conifer forests from Dr. David C. Bridges, Crop and Soil Sciences Department, University of Georgia, Griffin. A summary of their comments follows this paragraph. Syngenta requests that this information be reflected in the revised risk assessments.

Forestry Practices in the Pacific Northwest

Current use of atrazine in the forestry industry is minor. Major herbicides currently being used are VELPAR® and OUST® because of their broader weed control spectrum.

Weed control is utilized in "Clear Cut" areas in the first two years of conifer establishment to allow for faster release of seedlings. The size of clear cut areas varies, generally in the range of 20 to 80 acres per area. In some states, there are regulations that limit the maximum size of each clear cut area. Atrazine application is normally made before or after planting in the spring.

The majority of herbicide application (~ 90%) is by helicopter. The tank capacity on a helicopter is less than in an airplane; the standard helicopter load would be 100 gallons of spray solution, applied in a volume of 10 gallons of water per acre. The application rate of atrazine in this use pattern normally would be 4.0 lbs. active ingredient per acre. Based on a 100 gal load and 10 gpa, each helicopter load would treat 10 acres. On average, approximately 3 hours per day can be utilized for actual helicopter spraying because of changing weather conditions, particularly wind speed. Considering the multiple "small" plots to be sprayed, the small load size, and the limited application time frame per day, on an average day a pilot would treat approximately 150 acres. A high end estimate for this use pattern would be around 350 acres per day per pilot, and it would be unrealistic for a pilot to spray 1200 acres per day.

The helicopter is loaded from a tank truck containing the pre-mixed "ready-to-spray" solution of water and herbicide. The transfer of spray solution from the tank truck to the helicopter is done through a completely closed system with the pilot having no exposure during the operation. The herbicide and water are mixed in the tank truck at another site and driven to the application site in advance of the helicopter in order to minimize unproductive flight time from application sites to the mixing/loading site. Therefore the pilot/applicator is not also the mixer/loader.

Dr. Newton also provided information on Christmas tree production and again, atrazine is not the major product currently used. VELPAR® is the most commonly used herbicide. Most applications would be done aerially by helicopter, but the size of application sites are smaller when compared to conifer forestry use, except for a few large plantations. Thus, total acres applied per day per pilot would be less than the reforestation site use pattern discussed above. In newly planted sites, application may be by ground equipment. Application in the Pacific northwest is commonly done in the spring – mostly in March. Trimming or shaping of trees by hand is done after mid-July when annual growth is complete; harvesting of the trees is done in November and December, months after any potential atrazine application.

Forestry Practices in the Southeastern U.S.

Dr. David Bridges, Crop and Soil Sciences Department, University of Georgia – Griffin: Herbicide use in establishment of conifers is generally applied in a 30 to 50% band, leaving the row middles untreated. This banding practice is a ground application and cannot be accomplished aerially. Herbicide application to newly planted pines occurs in the months of March to May. OUST® is the most commonly used herbicide, followed by VELPAR®. Atrazine is not used on a large number of acres. In aerial application of any product, the number of acres treated is significantly less than 1200, as estimated by an aerial applicator. Where aerial application is used, helicopters are used with an enclosed system with no mixing/loading exposure to the pilot.

Changes Based on Expert Opinion

In conclusion, based on this information, Tables 5, 6, 7, 8, and 9 should be revised for conifer forests for mixing/loading liquids for aerial application, mixing/loading dry flowable for aerial application, and applying liquids with aircraft. The inaccurate acreage assumption of 1,200 acres should be deleted. Using 350 acres represents an upper-end estimate of how many acres of conifer clear-cut areas that can be treated per day. Due to the limited clear-cut forestry acreage that can be treated with atrazine and the fact that atrazine is infrequently used in this industry, it is unlikely that a mixer/loader or a commercial pilot who services these geographic areas would spray atrazine for more than 7 days per year. Given these facts, there is no need to assess intermediate-term risks for these scenarios.

10. Page 6, 4th Paragraph, Line 4: The majority of atrazine that is applied to corn, sugarcane and sorghum is applied by ground, not by air. Additionally, the number of acres treated by air is very small. Our review of the survey data (2000) indicates that there are only 216,508 corn acres in the US receiving aerial application of atrazine. For sorghum and sugarcane in the US there are 337,304 acres and 10,610 acres, respectively receiving aerial applications of atrazine. These values are very small when considered as a percent of the total acreage treated with atrazine.

    Acreage and pounds of atrazine applied by air in corn, sorghum, and sugarcane, are also available at state level. This state breakdown shows that the acreage is very low, indicating that potential for individual applicators applying large acreages per day is unlikely. For instance, the greatest number of sorghum acres treated by air by state in 2000 was 127,741 (Texas). For corn, the state reporting the most acres treated by air most was Texas at 106,867 A. A single applicator flying on 1,200 acres per day could potentially treat all of the Texas sorghum acreage in just over 10 days, but this scenario is highly improbable. Aerial application in undoubtedly divided among numerous application companies and pilots. This clearly indicates that it is extremely unlikely that a single aerial applicator would be spraying 1,200 acres per day for multiple days with atrazine.

    Thus, if the acreage assumption of 1,200 acres per day is used, there is no need to assess intermediate-term risks since the use data show that it is highly unlikely that one pilot will be spraying more than 8,400 acres (1,200 a/day x 7 days) in a particular geographic region. The intermediate-term risk assessments in Tables 5, 6, 7, 8, and 9 should be removed for corn and sorghum when 1,200 acres/day is assumed for mixing/loading liquid formulations for aerial application, mixing/loading dry flowable for aerial application, and applying liquid formulations with aircraft.

11. Pages 10,11 and 12, Incident Data: The Incident data used in the EPA risk assessment has not been available for Syngenta's review. Comments will be made after receipt of this information.

12. Page 11, Literature Review, 2nd Paragraph, Line 12: The EPA risk assessment states: "In January, 2000, Dr. Ruth H. Allen of the Agency reviewed five epidemiological studies with findings related to atrazine, including cancer incidence." The review by Dr. Allen has not been made available for Syngenta's review. Additional comments will be made after receipt of this information. However in relation to this review, the following statement is included in the risk assessment: "The most statistically significant (odds ratio 3.00) findings related ovarian cancer and atrazine exposure among workers in a corn growing region of Italy." This study (Donna et. al.) was too small to yield statistically stable odds ratios. Of the 7 “definitely exposed” individuals, only 4 actually reported using triazines while six of the 7 controls reported personal use of triazines. Technical limitations

in its design and conduct of this study prevent using it to evaluate a causal association between triazine exposure and human ovarian cancer. Therefore, this statement should be removed from the risk assessment.

13. Page 14, 7th Paragraph, Line 1: Although stated in the preliminary risk assessment that risks for roadside application (including bermuda-grass) will not be estimated with the assumption of a 4 lb ai/A use rate, this was in fact the rate used in the estimation. Syngenta's atrazine product labels do not support this rate, rather the risks should be assessed at the label maximum rate of 1 lb ai/A. Tables 5, 6, 7, 8, and 9 should be revised to reflect this error.

14. Page 15, 2nd Paragraph: Handler scenarios 1c, 2c, and 6 are incorrect. Syngenta supports atrazine use for roadsides only, not rights-of-way (these include railroad tracks, power company land, etc).

15. Page 15, 1st Paragraph, Line 4: It is correctly stated that mixer/loader/applicators would not require more than 1 week to treat golf courses, and that this work is done by a golf course employee rather than a commercial applicator service. As noted, this same situation occurs on sod farms. As a result, short-term risks (1 to 7 days) should be assessed, but intermediate-term (7 days to several months) should not. However, intermediate-terms risks were calculated for sod farm and golf course mixer/loaders and applicators in Tables 5, 6, 7, 8, and 9. These risks should be removed from the tables and from the discussions of the tables.

16. Page 15, 1st Paragraph, Line 9: Macadamia nut and guava orchards are of limited size and thus mixer/loaders and applicators applying atrazine in these orchards for weed control would handle the product less than one week. Based on data from the 1997 Census of Agriculture, there are 999 acres of guavas in Hawaii and 238 guava farms; there are 20,571 acres of macadamia nuts and 1,153 macadamia nut farms. The average farm size for these commodities is less than 20 acres. The standard default assumption that 80 acres are treated by groundboom per day is an overestimate for these crops given these farm size and production acreage figures. A more appropriate acreage such as 20 acres should be used to estimate risks to these workers. Intermediate-term risks should not be calculated and should be removed from the risk assessment.

17. Page 15, 2nd Paragraph: Handler scenario (3), loading granular formulation, and (9) applying granular formulation with a tractor-drawn spreader, are not correct and should be removed. Atrazine is not available as a straight granular formulation. It is only available on a fertilizer carrier, and this use is covered by scenario (8). Atrazine treated bulk dry fertilizer is not bagged and, therefore, there is no conventional loading of granules. The treated bulk fertilizer is loaded into trucks at the fertilizer dealership. These trucks are either equipped with spreaders or they are driven to the field site and the material is transferred to application trucks. Bag emptying into application equipment does not occur.

18. Page 15, 2nd Paragraph: Handler scenario (1e), mixing/loading/ incorporating liquid formulation into dry bulk fertilizer on-farm does not take place. This exposure scenario should be removed. Syngenta will submit a document in January that details the herbicide/fertilizer application process so that the risks can be more accurately assessed.

19. Page 16, Scenario (15): Flagging for aerial spray applications should be removed from risk assessments since it no longer takes place. Syngenta contacted Mr. Lee Futrell, Chemical Sales Manager of Summit Helicopter, Cloverdale VA, to obtain information on use of flagmen in commercial aerial application operations. Summit Helicopter is a large operation that has been in operation for over 20 years and operates within the area from the southeast coast north to Virginia, west to Illinois and southwest to Oklahoma/Texas. Within commercial aerial applications, human flagmen have been totally replaced with GPS technology that allows the pilot to see the spray boundaries and treated areas.

20. Page 19, Bullet 2: In the review of handler studies incorporating biomonitoring [Study submitted to the Agency in several phases including interim reports, final reports, and amendments are given MRID 439344-17, 439344-18, 441521-09, 441521-11, 443154-03, and 44154-04.] EPA cites two issues related to this study (see below). Based on the information and references in Syngenta's comments (also below) these issues should be resolved and the issue statement removed from the risk assessment.

    EPA Statement

    "Another significant issue was the choice of urinary total chloro-triazines residues for biological monitoring. The chloro-triazine residues represent only 12% of the total atrazine dose. It is HED policy that the predominant metabolite be used as the indicator for calculating the parent chemical, thereby reducing the error potential when back-calculating the dose."

    Syngenta Comment

    There is general agreement that atrazine and its chloro-triazine metabolites are the moieties of toxicological concern (MARC[1]). Furthermore, Syngenta has established a relationship between administered dose and eliminated dose in the human oral dose study on atrazine[2]. In this study, it was determined that approximately 12% of the chlorometabolites were eliminated in the urine. Thus, by directly measuring the moieties of toxicological significance, the back-calculated input dose of atrazine is not a critical feature of this assessment. This method was utilized mainly to permit a comparison of the biomonitoring results with whole body dosimetry and the Pesticide Handlers Exposure Database. The general concordance of these three independent methods for estimating the atrazine exposure provides the reviewer a level of assurance that the estimates from all these methods are likely to be correct.

EPA Statement

"Also, urine creatinine and creatinine clearance were not measured. Without these measures, there is no way to verify the accuracy of the volume of urine collected during biomonitoring (which is critical to calculating the total dose absorbed)."

Syngenta Comment

Urinary creatinine/clearance are useful parameters to measure if only a partial sample of the daily urine output is collected, i.e., first void. In this agricultural handler study[3], total daily urine outputs were collected, making creatinine correction for volume unnecessary.

21. Page 24, 2nd Paragraph: The ORETF mixer/loader/applicator exposure studies discussed by the Agency are more appropriate for assessing exposure to lawn care operators than the chemical-specific atrazine study. The basis for this correction is: a) two exposure monitoring studies (turf handgun and push-rotary broadcast spreader) conducted by ORETF using volunteers from a large, nationally recognized lawn care company contain more replicates than the atrazine exposure study; b) were conducted using lawn care professionals as opposed to simulated LCO professionals; c) were conducted wearing clothing representative of clothing typically worn by LCOs; and d) the area treated/amount of chemical handled was more typical of LCOs. For these reasons, the risks summarized in Table 10 more accurately represent risks to the LCOs than do the scenarios (12) and (13) in Tables 5, 6, 7, 8, and 9. Therefore, scenarios (12) and (13) should be removed in favor of the more robust and higher quality data set that exists from the ORETF studies.

22. Page 25: Supplemental Data and Evaluation of Exposure to Lawn Care Operators Using Atrazine in the Southern United States [MRID 441521-08]: EPA's discussion of this supplemental data indicates that additional information is needed. Syngenta will cooperate to provide additional use information to assist the Agency in conducting a more refined risk assessment.

23. Page 25 and 26: Comparison of Exposure Assessments to Atrazine and Simazine for Commercial Operators and Farmers who Mix, Load, and/or Apply Atrazine [MRID 445976-04]: This document compares worker exposure assessments based on three different data sets: 1) PHED, 2) a Subdivision U worker exposure study, and 3) a large scale biomonitoring study of commercial applicators during which no attempt was made to alter the normal practices of workers. The results shows agreement within one-half order of magnitude for all work functions commonly assessed for atrazine. Both studies and the PHED assessments indicate that workers using products containing atrazine are not exposed to levels that would be considered unsafe.

24. Page 27, 1st Paragraph, Line 1: The table summarizing the caveats and parameters specific to the surrogate data used for each exposure scenario

and corresponding exposure/risk assessment is listed erroneously as Table 3. This information actually appears in Table 4.

25. Page 27, 8th Paragraph, Line 1: Please delete the unrealistic assumption that aerial application to clear-cut forestry plots is 1,200 acres per day. See information in Comment 9.

26. Page 28, 4th Paragraph, Line 1: Please replace the assumption that 80 acres are treated by ground per day to guavas and macadamia nut orchards with a more appropriate acreage based on census data (such as 20 acres per day). See information in Comment 16.

27. Page 28, 5th Paragraph: Syngenta supports atrazine use for roadsides only, not rights-of-way. See information in Comment 14.

28. Page 28, 6th Paragraph: Please delete flagging as an exposure assumption for aerial application. See information in Comment 19.

29. Page 28, 7th Paragraph, Line 1: The estimate of 960 tons per day of bulk fertilizer being mixed and loaded is incorrect. The actual value should range from 150 to 300 tons per day (please refer to the Use Information Section Attachment 2 of this response for more details). As a result, the MOEs listed in Tables 5-9 are incorrect. Syngenta is in the process of gathering more information from various fertilizer dealers on this point and will submit a document that describes the treating process in greater detail. This document will be submitted to the agency in January 2001.

30. Page 28, 9th Paragraph: The default assumption that professional LCOs spray 5 acres per day is in error and should be replaced with an assumption of 3 acres per day as has been previously used by the Agency and supported by the ORETF data. The data provided by ORETF supported 2.5 acres treated per day by LCOs as a high-end estimate. For an upper-bound estimate of area treated and to be consistent with how the agency is conducting similar risk assessments for other turf products, the default assumption of 3 acres per day should be used.

31. Page 28, 10th Paragraph, Line 9: The Quantitative Usage Analysis generated by BEAD on 5/10/99 has not been available for Syngenta review. Comment will be made after receipt of this information.

32. Page 29, 1st Paragraph, Line 3: The generic protection factor contained in the risk assessment of 50% is in error and should be corrected to reflect 80 to 90% protection. Data in PHED supports a higher protection factor, as does the large data set submitted by ORETF where both inner and corresponding outer dosimeters were analyzed. Based on this information, the use of 50% protection significantly overestimates potential exposure and risk assessments utilizing this figure should be revised.

33. Page 29, 2nd Paragraph and continuing: Scenarios for impregnating or coating dry bulk granular fertilizer are incorrect. This is a commercial process only utilizing machinery designed for this purpose; no on-farm fertilizer impregnation takes place. As noted by the Agency, the common rates for application of fertilizer to corn and sorghum are 400 to 700 pounds per acre; lower rates than this result in poor distribution and are thus not typical. Further, the assumption that the hourly through-put (tons/hr) can be multiplied by 8 hours per work day is erroneous. Fertilizer treatment is limited by blender capacity, application equipment capacity, and the number of application trucks that can be filled per hour. A facility would be treating fertilizer with other pesticides during a day, not just atrazine. Therefore, the assumption that 960 tons of fertilizer is treated with atrazine per day is a gross overestimate. As requested by HED, Syngenta will supply information and data regarding this use scenario in January 2001.

34. Page 34, 1st Paragraph, Line 2 and 3rd Paragraph, Line 3. "Table 4" is in error and should be replaced with "Table 3".

35. Page 35, 3rd Paragraph, Lines 3 and 10: Please remove "rights-of way" as a use and correct the maximum application rate for the roadside application to 1 lb ai/A. See information in Comments 13 and 14.

36. Page 36, 1st Paragraph, Line 3: Please remove the comparison to the PHED data set which is of lesser quality in assessing risks to LCOs than the more robust ORETF data. See information in Comment 21.

37. Page 36, 2nd Paragraph and Page 38: Intermediate-term concerns for corn and sorghum mixer/loaders do not exist if it is assumed they are treating 1,200 acres per day by air. Aerial application to conifer forests (see Comment 9) are not made to 1,200 acres per day; assuming an upper-bound of 350 acres/day, intermediate-term concerns for mixer/loaders and applicators are resolved. Intermediate-term risks will be reduced for the roadside worker if the rate is changed to 1 lb ai/A. Please revise the risk assessment to reflect these changes.

38. Page 39, 2nd Bullet point, Line 1: Syngenta will provide more information on days of use per year for agricultural applicators to assist in refining the risk assessment.

39. Pages 39, 42, 44 and Tables 12, 13, and 14: Both the timing of an atrazine application with respect to re-entry activities and what re-entry activities actually occur should be taken into account when assessing post-application exposure. For example:

    - Manual irrigating/moving of irrigation pipe and scouting are highly unlikely to occur in areas designated as fallow and roadsides (note rate should be 1 lb ai/A).

- Manual irrigation/moving of irrigation pipe do not occur in newly planted conifer forests; scouting in conifer forests is not a typical practice.

- Staking, topping, and training of Christmas trees do not take place for at least 3 months after an atrazine application; harvesting of Christmas trees takes place in November and December, almost 9 months after a potential atrazine application.

- The atrazine label prohibits harvesting and transplanting of turf for 30 days following an atrazine application.

- Hand-pulling weeds on golf courses or sod farms immediately following an application of any herbicide is an extremely improbable scenario.

Based on this information, post-application exposure assessment is not required for fallow ground, roadsides, and conifer forests and should be removed. The risk assessment for people staking, topping, training or harvesting Christmas trees should be removed as there would be no atrazine residues 3 or 9 months after application. The risk assessments for transplanting, harvesting and hand weeding golf course turf and sod farms should be removed. When the timing of atrazine applications are taken into account relative to re-entry activities, any post-application exposure concerns are alleviated.

40. Pages 43 and 44, Bullet Items: "Highest average" residue values for occupational risk assessments should be replaced in the calculations with a measurement of central tendency of the data for the time point of interest. Conservatism to bias exposure to the upper-end is found in the other parameters of the dose calculations - transfer coefficients and the assumptions of hours in contact with treated foliage.

41. Page 120, Table 11: The dislodgeable residue values listed in this table are incorrect. For MRID 449588-01 (atrazine granular turf application), none of the values presented in this table agree with the actual study data from the referenced report. Please correct the numbers in these tables (see following table. Also, please present the data for the irrigated turf from the same study (MRID 449588-01) since the label recommends the granular fertilizer formulation of atrazine to be watered-in (see following table). Residential post-application exposure risk assessments should be calculated for irrigated turf.

Comparison of TTR Values Used in the Atrazine Preliminary Risk Assessment With Values in the Syngenta Study Volume [MRID 449588-01, Atrazine Granular Turf Application Study]

	GA			FL		
	EPA Table 11 Pg. 120	Pg. 33 Syngenta Study		EPA Table 11 Pg. 120	Pg. 34 Table 6 Syngenta Study	
DAT	Values	Values Not Watered In	Watered In	Values	Values Not Watered In	Watered In
0	0.0585	0.048	NA	0.162	0.154	-
.167	-	-	-	0.216	0.204	0.0827
.79	0.0145	0.0119	0.00961	-	-	-
1	0.0351	0.0288	0.00799	0.0883	0.0834	0.00858
3	0.0182	0.0149	0.00166	0.0536	0.0506	0.00895
7	0.0105	0.00859	0.00595	0.0393	0.0371	0.00341
10	0.00608	0.00499	0.00539	0.0269	0.0254	0.00277
14	0.006	0.00492	0.00360	0.0165	0.0156	0.00179
21	0.00308	0.00252	0.000918	0.00242	0.00229	<MQL
28	-	-	-	0.00206	0.00195	<MQL
30	0.00124	0.000992	<MQL	-	-	-
35	0.00108	0.000864	<MQL	0.00163	0.00154	<MQL

The 12-hour residue for the NC liquid-treated turf appears to be unusually high when compared to the residue before and after this time point and when compared to the same timepoint at the GA site. Since this study is the property of another registrant, Syngenta does not have access to the data for verification. Please verify that this is in fact the correct number.

42. Page 46, 6th Paragraph, Line 1; A lawn size of 0.5 acres (21,780 sq ft) is an overestimate of lawn size based not only on published data but as a function of practicality – number and location of faucets would normally limit area treated, and time required to treat a half acre with a hose-end sprayer would be prohibitive for most people. A more typical lawn size is 6,818 sq ft (TrueGreen-ChemLawn data, 1999).

    A low-pressure hand-wand is a one-nozzle wand connected to a spray tank of 1 or 2 gallon capacity. The pressure used to drive the spray out of the nozzle is obtained by manually pumping a piston connected to the top of the spray tank. To accurately treat 0.5 acres with a low-pressure hand-wand sprayer, would be exceptionally time-prohibitive and labor intensive. Low-pressure hand-wand sprayers are used for treating small areas such as spot treatments in the lawn, ornamentals and shrubs, vegetable gardens, flower beds, and perimeters of buildings. An area of 1,000 sq ft is typically used for risk assessments using this type of equipment (same area used for belly-

grinder). Table 16a should be revised using 1,000 sq ft for low-pressure hand-wand (R2).

43. Page 126, (Table 16a): Hose-end sprayer and push type spreader calculations utilizing PHED data should be deleted and replaced with the higher quality risk assessment using ORETF data in Table 16b. See information in Comment 21.

44. Page 48, Handler Scenarios with Risk Concerns, 1st Paragraph, Line 1: Based on error corrections in Comments 42 and 43, the statement that there are risks of concern for the hose-end sprayer and low-pressure hand-wand is incorrect and should be removed.

45. Page 49, 7th Paragraph, Line 9: Residential intermediate-term post-application risk estimations should be removed from the assessment. It is highly unlikely that there would be residential intermediate-term post-application exposure to treated turf given the high probability that a rain or irrigation event or a mowing event would take place within 7 days of an application. In the southeast, where atrazine is labeled for turf use, rain is quite likely to occur during the time period that atrazine may be applied (October 1 through April 15). In addition, the consumer label recommends irrigation following application to increase efficacy of the product. Maintained lawns in the southeast are typically irrigated. Therefore, atrazine residues would be washed to the thatch and soil.

46. Page 50, Bullet 2: Please remove the reference to wettable powder formulations. These are not available to the consumer.

47. Page 50, 3rd Paragraph, Line 2: "Highest average" residue values for occupational risk assessments should be replaced in the calculations with a measurement of central tendency of the data for the time point of interest. Conservatism to bias exposure to the upper-end is found in the other parameters of the dose calculations - transfer coefficients and the assumptions of hours in contact with treated turf.

48. Page 50, 4th Paragraph, Line 3: The granule ingestion scenario is not likely to happen and should be deleted for the following reasons. The ingestion scenario assumes oral exposure to applied granules in sufficient quantities to deliver atrazine. This is not an appropriate assumption for fertilizer. These products are usually highly alkaline (pH around 10) and contain high concentrations of nitrogen and phosphorus and potassium salts. Ingestion of more than a “taste” is highly unlikely considering the caustic nature of fertilizer. Furthermore, fertilizer is hydroscopic, and when subjected to moisture or humid conditions, it dissolves and is no longer available in the granular form. Syngenta recognizes the Agency's request for addition information on granule size, which will be provided as soon as possible.

49. Page 129, (Table 18): The formula used to calculate hand-to-mouth exposure in footnote d is incorrect – the 50% efficiency of transfer from hand

to mouth has been omitted from this calculation. Please revise the risk assessment to reflect this error.

50. Page 53, 1st Paragraph, Line 4: The use of the default 5% of the application rate should only be used in absence of compound-specific data. Since there exists TTR data for both the granular fertilizer and liquid formulations of atrazine, the TTR data should be used. An evaluation of the limited data available (Clothier, 2000) to compare how much residue can be transferred from surfaces by dry hands versus wet hands indicates that the increase is 3-fold **(see position paper at the end of this section);** this is substantiated by proprietary work in progress by a task force of which Syngenta is a member. The work by Clothier also indicates that the PUF roller (a sampling technique similar to that used in the TTR studies) removes more surface residue than does a hand press, and thus overestimates potential transfer of pesticide from turf to hands. The average amount of residue transferred in the granular turf transferable residue study was 0.43% (non-irrigated turf) and 0.35% (irrigated turf). Multiplying these numbers by 3 results in 1.29% (non-irrigated) and 1.05% (irrigated) of the application rate for a "wet" hand transfer. These values should be used to assess potential "wet" hand-to-mouth exposure to toddlers until more relevant data are developed for this scenario in turf.

51. Page 54, 2nd Bullet Point, Line 6: The statement that the turf transferable residue study done with the liquid formulation was at 4.0 lb ai/A contradicts information in Table 11 (page 120) that states the application rate to be 2.0 lb ai/A.

52. Page 55, 4th Bullet Point, Line 3: The statement that the turf residues are greater on the day after application is not supported by the data from the granular TTR study (MRID 449588-01). At the GA site, the highest average residues were seen at the "0 hour" time point; at the FL site, the highest average residues were seen at 4 hours after application.

    The statement included in the risk assessment indicating that data from the day of application is typically discarded by risk assessors is in error. There has been no agreement by risk assessors to discard data from the day of application due to high variability; in fact, these data are critical to evaluating risks for people re-entering treated areas. When examining this type of data, there is no trend for day of application data to be any more variable than data collected at any other time point.

53. Page 55, 1st Paragraph of Post application Exposure Risk Estimates, Line 4: "Florida granular residue data" should be replaced with "NC-liquid residue data" (see Table 17).

    Since the dermal risks were summarized for the liquid formulation, it would be helpful to also summarize those for granular-treated lawns. The short-term and intermediate-term dermal post-application MOEs are all above 1000.

When the TTR data is used and adjusted by a factor of 3 to account for wet hands, the hand-to-mouth risks are acceptable. Please revise the risk assessment to reflect this error.

The ingestion of granules is not a viable scenario due to the caustic nature of the fertilizer. Please revise the risk assessment to reflect this error.

54. Page 56, 1st Paragraph under Summary: Based on information in Comments 2, 6, 11, 40, 41, 47, 48, 49, 50, 52, and 53 the short-term, post-application exposure scenarios used to estimate these potential risks are highly improbable. The risk assessment should be revised to reflect acceptable margins of exposure for these scenarios.

    Also in this paragraph EPA indicates an intermediate-term, post-application risk concern for incidental oral ingestion scenarios for toddlers on turf after applications of atrazine treated fertilizer granules. Table 18 (page 129) shows the MOEs for this intermediate-term exposure scenario are acceptable. Please revise the risk assessment to reflect an acceptable margin of exposure for this scenario. However, intermediate-term exposure is not appropriate for this risk assessment.

55. Page 56, 2nd Paragraph, Line 1: under "Summary": The statement that applying a granular formulation and using the lawn the same day may cause an exposure concern for an adult is incorrect. As shown in Table 17, the post-application MOEs for an adult are above 1000. Table 16b shows the MOE during application with a push-spreader are also above 1000.

56. Page 56, Bullet 4 under "Data Gaps and Uncertainties": The Agency indicates a need for additional data on granular size and product breakdown with and without watering in for the granular fertilizer products. In addition to information submitted in this document, Syngenta will submit more detailed information on these questions to better estimate risks for the use scenarios including fertilizer products.

57. Page 56, Paragraph 1 under "Recommendations": The Agency states that a probabilistic approach to the use of the various residue study data would help refine the post-application residential risk assessments. Syngenta will conduct a probabilistic risk assessment for submission to EPA in January 2001.

58. Page 56, Paragraph 2 under "Recommendations": The Agency states that current labeling should be strengthened to prevent accidental ingestion by children and indicate the importance of watering in. Syngenta will work with the Agency to evaluate changes needed in the current label statements.

59. Page 70, Table 4, Scenario 12: Lawn Handgun, Liquid Formulations: Note that this should state “LCO” not “PCO”. With respect to the ORETF data, the data generated for professional lawn care operators is based on mixing

and loading and application. There were no significant differences between formulations mixed (15 replicates per formulation) and application only (30 replicates), thus one can combine all the dermal data for risk assessment purposes.

60. Pages 65, 81, 92, 118, 119 [Tables 3 , 5, 6, 9, and 10, respectively; Footnote b]: For several exposure scenarios in the preliminary risk assessment, Syngenta has provided information on agricultural practices that show revisions should be made in the assumptions on acreage treated. Syngenta has not had the opportunity to review the document cited in Tables 3, 5, 6, 9, and 10, Exposure SAC Policy #9 *"Standard Values for Daily Acres Treated in Agriculture*" revised June 23, 2000. We respectfully request a copy of this document for review.

61. Pages 119 and 126 [Tables 10 and 16b, respectively; Footnote c]: Syngenta has recommended that only short-term risks should be calculated since intermediate-term risks are not likely. Syngenta has not had the opportunity to review the documents cited in Tables 10 and 16b, 2 EPA draft memos, dated October 19, 2000 "*Exposure of Professional Lawn Care Workers During the Mixing, Loading and Application of Granular Turf Pesticides Utilizing a Surrogate Compound*" and "Exposure of Professional Lawn Care Workers During the Mixing and Loading of Dry and Liquid Application of Turf Pesticides Utilizing a Surrogate Compound". We respectfully request a copy of these documents for review.

62. Pages 121, 122, and 123 [Tables 12, 13 and 14, respectively; Footnote a]: Syngenta has not had an opportunity to review a document cited as the source used to determine transfer coefficients in Tables 12, 13 and 14, Science Advisory Council for Exposure Memo # 003.1 "Agricultural Transfer Coefficients," revised - August 7, 2000. We respectfully request a copy of this document for review.

References

1. Atrazine (080803) Reregistration Case No. 0062. HED Metabolism Assessment Review Committee: Residues to be Regulated and Residues of Concern for Dietary Assessment. No MRID. DP Barcode. November 15, 2000.

2. Davidson, I. 1988. Metabolism and kinetics of atrazine in man. MRID 43598603.

3. Selman, F.B. and L. Rosenheck. 1996. Evaluation of the potential exposure of workers to atrazine during commercial mixing, loading, and spray application to corn. Final Report. Project No. 101930; Study No. 178-95. MRID 441521-09.

Position Paper:

Comments on the Use of a 5% Factor Applied to the Application Rate for Assessment of Hand-to-Mouth Exposure to Turf Treated with Atrazine

EPA has used a 5% factor in the atrazine human health risk assessment to reflect concern about increased exposure to pesticide residues during hand-to-mouth contact due to wet hands or sticky fingers. EPA has applied this factor only for exposure from hand-to-mouth contact. Additionally, EPA has applied this factor to the maximum application rate of atrazine to turf, rather than using the atrazine-specific turf transferable residue (TTR) data that was used in the dermal exposure assessment. The following presents information showing that in the atrazine preliminary risk assessment use of chemical specific data is more appropiate for the most accurate estimation of risk.

EPA has presented the Standard Operating Procedures (SOP) (EPA 1997a) used for assessment of non-dietary (residential) scenarios to the Science Advisory Panel (SAP) for peer review prior to their use for regulatory purposes. The SOPs were initially presented to the SAP in September 1997 and a revised version was made available in December 1997 (EPA 1997b) which incorporated comments from the SAP. In September 1999, additional revisions and issues regarding the SOP factors were presented to the SAP (EPA 1999a). The factor being discussed herein was discussed briefly in the revisions presented in September 1999 (EPA 1999a) and in the SAP final report (EPA 1999b). Based on a review of the SAP background document, references listed in the background document, and the SAP final report from the September 1999 meeting, it can only be said that the conclusions were equivocal.

The background document for the SAP report proposes the use of the 5% as: "In the absence of chemical specific transferable residue data on turfgrass, the Agency recommends dislodgeable values of 5 percent for use in post-application dermal exposure estimates in the Residential SOPs." (page 25, EPA 1999a, emphasis added). It should be noted there are two important issues: 1) the absence of chemical specific data; and 2) use for dermal exposure. First, there is chemical-specific data for atrazine. It shows the turf transferable residue to be around 0.4% for the granular fertilizer formulation. Secondly, are not discussed in the background document or the final SAP report specific recommendations are not discussed on assumptions for the oral exposure scenario defined in relation to sticky fingers or wet hands transferring additional residues.

EPA references a variety of sources in the SAP background document and during discussions with atrazine registrants to support the proposal of a 5% factor applied to the initial application rate (Clothier 2000; Camann et al. 1995; and Lu and Fenske 1999). The report by J. Clothier (2000) presents a 2.5-3.5 times higher transfer efficiency for wet palms versus dry palms. Camann et al. (1995) and Lu and Fenske (1999) observed that using moistened materials for dislodging residues resulted in less that 5% transferability (0.6 to 2.1% and 1 to 3.1%, respectively). Additionally, these references present data that show that the hand press method of transferring residues gives much lower transferability

than methods used in TTR studies. Thus, the data from the atrazine turf study is already conservative as it was gathered using a modified cloth roller method. Finally, these references also support that dislodgeability is greatest from vinyl (the source of the Clothier data) compared to carpet or turf, so applying data from vinyl to a turf analysis is even more conservative.

The final SAP report states, “With respect to moist or sticky hands, there are not enough available data to make a determination whether using a higher “percent transferable residue” factor is justifiable.” (page 11, EPA 1999b).

Finally, the use of the 5% factor has not been used consistently by the Agency. EPA staff have stated that this factor was used in other assessments of exposure to organophosphate products on turf. A review was conducted of the risk assessments currently available to the public on the Internet at the EPA-OPP website. The following conclusions can be made:

- The factor was used in the REVISED malathion assessment for defense of the mosquito-spray scenarios where no TTR data was available. This is an appropriate use of the factor.

- The factor was NOT used in the acephate assessment, instead TTR data was used. This is an appropriate use of TTR data and the factor is unnecessary.

- The factor was NOT used in the bensulide assessment, instead TTR data was used. This is an appropriate use of TTR data and the factor is unnecessary.

In summary, the use of the 5% factor has not been adequately peer-reviewed and a review of the data on the effect of wet palms does not support the use of this factor. It is appropriate to use chemical-specific data, without application of additional factors, when they are available (i.e., TTR data). Nonetheless, Syngenta recognizes the need for data development in this area.

Attachment 6

List of Ongoing Atrazine Research and/or Papers of Syngenta and Proposed Submission Dates

A. Toxicology/Mode of Action

1. Final Report of the Comparison of the LH Surge in Female Rats Administered Atrazine, Simazine or DACT via Oral Gavage for One Month. Covance Study No. 6117-398. (February 2001).

2. Six Month Study of the Effects of Dietary Atrazine and Hydroxyatrazine on the LH Surge in Sprague-Dawley and Fischer 344 Female Rats, Covance Study No. 6117-403. (March 2001).

3. 52-Week Toxicity Study of Simazine, Atrazine, and DACT Administered in the Diet to Female Rats, Covance Study No. 6117-399 (April 2001).

4. Addendum to 52-Week Toxicity Study of Simazine, Atrazine, and DACT Administered in the Diet to Female Rats, Covance Study No. 6117-399 (April, 2001): Brain neurochemistry and Neurotransmitter Data (December 2001).

5. Planned/ongoing research on atrazine (Projected to be reported in 2002)

   - Studies on the effects of atrazine on LH and testicular function in peri-puberal pair-fed and atrazine-treated males. (Principle Investigator: Dr. Barry Zirkin, John Hopkins University.

   - Studies on the effects of atrazine on prolactin levels and the delayed effects on the development of prostatitis in male fetuses exposed to atrazine during lactation. (Principle Investigator: Dr. Barry Zirkin, Johns Hopkins University).

   - Studies on the role of atrazine-induced glutathione depletion on leukotriene-mediated LH signaling processes in the GnRH pulse-generator (Principle Investigator: Dr. Charles Eldridge, Bowman Gray School of Medicine).

   - Dynamic studies on the effects of atrazine on the GnRH pulse-generator performance characteristics in intact female SD and Fischer-344 rats. (Principle Investigator: Dr. Lee Tyre, Duke University.)

   - In vitro studies on the potential effects of atrazine on aromatase in cultured brain cells. (Principle Investigator: Dr. Jim Simpkins, University of North Texas).

   - The development of a pharmacokinetic and pharmacodynamic model for atrazine in rodent and a primate surrogate (Principle Investigator: Mel Andersen, University of Colorado, Fort Collins, CO).

B. Water Monitoring/Stewardship Activities

1. Syngenta Voluntary Monitoring Update for 2000 (March 2001).

2. Final report covering the analytical data and exposure assessment of CWS Groundwater monitoring for metabolites initiated in 1999 (March, 2001).

3. BMP/Stewardship & Research Update/Plans for Selected CWS Watersheds (April, 2001).

4. Revised PLEX Database including total chloro-triazines (1993-1999) (February, 2001).

C. Ecological Effects

1. Aquatic Ecological Risk Assessment of Atrazine – A Tiered Probabilistic Approach, A Report of an Expert Panel (January 2001).

2. Exposure Assessment of Atrazine in Surface Waters: A Tiered Probabilistic Modeling Approach (January 2001).

3. A Risk-Based Assessment of Endocrine System Responses in Fish, Amphibians, and Reptiles for Atrazine – A Report of an Expert Panel (January 2001).

4. Effects of Atrazine on the Sex Ratio of *Daphnia pulicaria* (January 2001).

5. Summary of Environmental Fate of Atrazine (January 2001).

D. Other Areas of Research

1. Updated Turf Risk Assessment Using Probabilistic Approach (March 2001).

2. Proposed Tolerance Revisions for Atrazine and Metabolites (In response to the RED).

3. A Follow-Up Study of Cancer Incidence Among Workers at the Syngenta ST. Gabriel Plant (April 2001).

4. Atrazine Field Accumulation in Rotational Crops (Potatoes and Peas) Study No. 169-99 (April 2001).

5. Radiolabeled AAtrex 4L Applied to Wheat Stubble Study No. 503-97 (April 2001).

Attachment 7

Syngenta's Comments on EPA's November 30, 2000 "Atrazine. HED's Preliminary Human Health Risk Assessment for the Reregistration Eligibility Decision (RED)"
Total Chloro-Triazine Concentrations in Surface Water Calculated from Atrazine Concentrations Listed in the PLEX, VMS, and ARP Databases

Total Chloro-Triazine Concentrations in Surface Water Calculated from Atrazine Concentrations Listed in the PLEX, VMS, and ARP Databases

1. The data used in the EPA deterministic drinking water calculations are sourced from three databases: Syngenta PLEX, Syngenta VMS, and ARP. The latter two databases are monitoring programs with weekly and biweekly sample frequency in the May to July period each year. When there is an unequal sample frequency, the proper statistical calculation is a time-weighted mean that more accurately determines the annual, seasonal, and period means than the simple arithmetic averaging of all individual values over a given period of time. EPA did not use a time-weighting procedure in the development of annual and seasonal means for the CWS identified in Tables 10, 11, 13 and 14.

2. EPA developed quarterly and annual regression equations to estimate total chloro-triazine to be used with the PLEX, VMS, and ARP databases. For the existing atrazine annual means provided for CWS in the PLEX database, EPA applied the annual regression equation to estimate total chloro-triazine annual means. Instead, the four quarterly regressions should be applied to the individual atrazine data points within each quarter to determine individual total chloro-triazine concentration for each sample. Individual sample total chloro-triazine concentrations should then be time weighted within each quarter (in the case of more than one analytical result in a given quarter) to obtain a single quarterly concentration. Quarterly concentrations are then averaged to determine an annual time weighted total chloro-triazine mean concentration for each CWS. This is calculated on an annual basis for each year in the 6 year PLEX database and multiple years can be averaged to calculate period means (Table 1). We have followed the procedure outlined here for the development of time weighted total chloro-triazine annual mean concentrations.

3. For the VMS and ARP databases, EPA applied the four quarterly regressions to individual atrazine sample results within each quarter. EPA calculated annual total chloro-triazine means arithmetically (not time weighted) for each CWS in the VMS and ARP databases by year. Instead, individual sample total chloro-triazine concentrations should be time weighted by calculating monthly averages then averaging the monthly averages to obtain a 3-month quarterly concentration. The time-weighted annual mean is determined by averaging monthly concentration over the entire year. This is calculated on an annual basis for each year in the VMS and ARP databases. We have followed the procedure outlined here for the development of time weighted total chloro-triazine annual mean concentrations.

4. EPA calculated seasonal total chloro-triazine means arithmetically (not time weighted) for each CWS in VMS and ARP databases by season, from total chloro-triazines determined using the four quarterly regression equations. Individual sample total chloro-triazine concentrations should be time weighted within each quarter/season by averaging three monthly average

concentration. This is calculated on a seasonal basis for each year in the VMS and ARP databases. We have followed the procedure outlined here for the development of time weighted total chloro-triazine seasonal mean concentrations.

Table 1: Time–Weighted Total Chloro-Triazine Period Means from PLEX and VMP databases (1993-1998) and ARP database (1995-97) Calculated for CWS Identified in EPA Table 14 (p.64-66)

CWS	Period Mean PLEX (ppb)	Period Mean VMP (ppb)	Period Mean ARP (ppb)
Shipman, IL	6.72	8.42	5.63
Hettick, IL	6.78	10.45	-
Salem, IL	1.94	7.05	1.38
Palmyra-Modesto	4.09	6.42	2.48
Hillsboro, IL	3.71	2.77	-
Gillespie, IL	4.17	-	4.73
White Hall, IL	3.35	4.23	6.00
Farina, IL	4.28	6.06	4.29
Kinmundy, IL	1.93	3.75	-
ADGPTV, IL	3.23	4.56	-
Scottsburg, IN	0.56	2.21	3.02
Holland, IN	2.68	1.36	3.22
Higginsville, MO	3.10	1.66	1.58
Sardinia, OH	4.83	-	-
Drexel, MO	4.86	1.67	-
Dearborn, MO	4.10	1.06	-
Chariton, IA	1.84	2.48	2.40
Iberville, LA	3.87	3.91	-
Bucklin, MO	1.81	4.45	-
Centralia, IL	2.18	3.72	2.46
Wayne City, IL	1.84	2.24	-
Batesville, IN	2.01	-	4.28
Vandalia, MO	2.21	2.78	2.71
Flora, IL	1.75	-	2.76
Sorento, IL	3.84	-	3.22
West Salem, IL	3.72	-	3.85
North Vernon, IN	1.21	-	5.62
Carlinville, IL	2.69	2.19	2.82

5. On page 70, first paragraph, EPA listed CWS with individual annual maximum sample concentrations at or above the chronic DWLOC of 18 ppb for infants and children. EPA is concerned that these CWS pose uncertainty in the risk assessment since there is not sufficient data to assess total chloro-triazine (TCT) seasonal mean concentrations for comparison to the DWLOC for the eight population subgroups. EPA identified in Appendix E 36 CWS for EPA Office of Water to review in assessing potential exceedance of the DWLOC. Syngenta has calculated time weighted total

chloro-triazine seasonal and annual mean concentrations from the PLEX, VMS, and ARP databases for the 18 CWS with the highest concentrations (Table 2). The seasonal and annual means were calculated for the 18 CWS when there were data for the year listed by EPA and all other years for each of the 18 CWS during the six-year (1993-1998) time period. The results of the time weighted seasonal and annual TCT mean concentrations for the 18 CWS are shown in the following table.

Table 2

COMPARISON OF ANNUAL MAXIMUM TOTAL CHLOROTRIAZINE CONCENTRATIONS BY EPA-OPP IN APPENDIX E TO ANNUAL MEANS IN PLEX UPDATE V, ATRAZINE VOLUNTARY MONITORING PROGRAM AND THE ACETOCHLOR REGISTRATION PARTNERSHIP PROGRAM

		Total Chlorotriazine Max Conc. (ppb)	Total Chlorotriazine Annual Mean (ppb)			Total Chlorotriazine Seasonal Mean (ppb)	
CWS	**Year**	**Appendix E**	**PLEX**	**VMS**	**ARP**	**VMS**	**ARP**
McClure, OH	1993	-	-	-	-	-	-
McClure, OH	1994	-	0.98	-	-	-	-
McClure, OH	1995	-	-	-	2.13	-	6.20
McClure, OH	1996	-	0.83	-	2.25	-	5.68
McClure, OH	1997	-	4.89	-	2.16	-	7.13
McClure, OH	1998	20.1	1.91	-	1.47	-	4.06
Waverly, IL	1993	-	1.03	1.32	-	2.11	-
Waverly, IL	1994	-	3.66	-	-	-	-
Waverly, IL	1995	-	2.77	-	-	-	-
Waverly, IL	1996	-	3.28	-	-	-	-
Waverly, IL	1997	-	1.51	-	-	-	-
Waverly, IL	1998	-	2.92	-	-	-	-
Newark, OH	1993	-	-	-	-	-	-
Newark, OH	1994	-	0.43	-	-	-	-
Newark, OH	1995	-	2.60	-	-	-	-
Newark, OH	1996	-	0.78	-	-	-	-
Newark, OH	1997	29.7	2.88	-	-	-	-
Newark, OH	1998	-	1.02	-	-	-	-
Delaware, OH	1993	-	-	-	-	-	-
Delaware, OH	1994	-	0.80	-	-	-	-
Delaware, OH	1995	-	-	-	-	-	-
Delaware, OH	1996	-	5.13	-	-	-	-
Delaware, OH	1997	19.8	5.33	-	-	-	-
Delaware, OH	1998	-	1.82	-	-	-	-
Lake of the Woods, OH	1993	-	-	-	-	-	-
Lake of the Woods, OH	1994	-	-	-	-	-	-
Lake of the Woods, OH	1995	-	-	-	-	-	-
Lake of the Woods, OH	1996	-	5.35	-	-	-	-
Lake of the Woods, OH	1997	18.1	6.02	-	-	-	-
Lake of the Woods, OH	1998	-	3.02	-	-	-	-
Napoleon, OH	1993	-	-	-	-	-	-
Napoleon, OH	1994	-	2.08	-	-	-	-
Napoleon, OH	1995	-	3.42	-	-	-	-
Napoleon, OH	1996	-	3.52	-	-	-	-
Napoleon, OH	1997	17.9	4.22	-	-	-	-
Napoleon, OH	1998	-	1.97	-	-	-	-

Table 2 (Continued)

CWS	Year	Total Chlorotriazine Max Conc. (ppb) Appendix E	Total Chlorotriazine Annual Mean (ppb) PLEX	VMS	ARP	Total Chlorotriazine Seasonal Mean (ppb) VMS	ARP
Sardinia, OH	1993	-	-	-	-	-	-
Sardinia, OH	1994	-	0.87	-	-	-	-
Sardinia, OH	1995	-	-	-	-	-	-
Sardinia, OH	1996	55.2	14.83	-	-	-	-
Sardinia, OH	1997	-	2.50	-	-	-	-
Sardinia, OH	1998	-	1.12	-	-	-	-
Louisville, IL	1993	-	3.14	-	-	-	-
Louisville, IL	1994	-	5.33	-	-	-	-
Louisville, IL	1995	-	2.84	-	-	-	-
Louisville, IL	1996	24.3	5.75	-	-	-	-
Louisville, IL	1997	-	2.84	-	-	-	-
Louisville, IL	1998	-	-	-	-	-	-
Osawatomie, KS	1993	-	-	-	-	-	-
Osawatomie, KS	1994	-	-	-	-	-	-
Osawatomie, KS	1995	-	1.84	-	-	-	-
Osawatomie, KS	1996	17.3	6.30	-	-	-	-
Osawatomie, KS	1997	-	3.54	-	-	-	-
Osawatomie, KS	1998	-	1.08	-	-	-	-
Adrian, MO	1993	-	-	-	-	-	-
Adrian, MO	1994	22.9	7.80	-	-	-	-
Adrian, MO	1995	-	0.63	0.64	-	0.50	-
Adrian, MO	1996	-	0.54	0.52	-	0.58	-
Adrian, MO	1997	-	0.54	0.47	-	0.34	-
Adrian, MO	1998	-	1.97	1.59	-	3.48	-
Springfield, IL	1993	-	1.28	-	-	-	-
Springfield, IL	1994	20.1	4.71	-	-	-	-
Springfield, IL	1995	-	1.48	1.57	1.98	1.44	2.49
Springfield, IL	1996	-	1.92	1.49	1.79	1.04	1.45
Springfield, IL	1997	-	0.95	1.18	1.25	0.94	1.13
Springfield, IL	1998	-	1.01	1.69	1.60	1.78	2.13
Paris, IL	1993	-	2.28	-	-	-	-
Paris, IL	1994	18.7	9.15	-	-	-	-
Paris, IL	1995	-	0.77	-	0.95	-	0.60
Paris, IL	1996	-	1.08	-	2.96	-	6.72
Paris, IL	1997	-	0.67	-	1.69	-	1.86
Paris, IL	1998	-	0.74	-	3.10	-	9.70
Keysport, IL	1993	-	2.40	-	-	-	-
Keysport, IL	1994	18.7	8.04	-	-	-	-
Keysport, IL	1995	-	2.93	-	-	-	-
Keysport, IL	1996	-	6.03	-	-	-	-
Keysport, IL	1997	-	1.74	-	-	-	-
Keysport, IL	1998	-	-	-	-	-	-

Table 2 (Continued)

CWS	Year	Total Chlorotriazine Max Conc. (ppb) Appendix E	Total Chlorotriazine Annual Mean (ppb) PLEX	VMS	ARP	Total Chlorotriazine Seasonal Mean (ppb) VMS	ARP
Clay City, IL	1993	-	2.74	-	-	-	-
Clay City, IL	1994	18.7	6.98	-	-	-	-
Clay City, IL	1995	-	1.36	-	1.34	-	2.29
Clay City, IL	1996	-	0.44	-	0.46	-	0.46
Clay City, IL	1997	-	1.35	-	1.56	-	1.98
Clay City, IL	1998	-	0.56	-	0.81	-	0.61
Louisville, IL	1993	-	3.14	-	-	-	-
Louisville, IL	1994	18.7	5.33	-	-	-	-
Louisville, IL	1995	-	2.84	-	-	-	-
Louisville, IL	1996	-	5.75	-	-	-	-
Louisville, IL	1997	-	2.84	-	-	-	-
Louisville, IL	1998	-	-	-	-	-	-
Butler, MO	1993	-	-	-	-	-	-
Butler, MO	1994	18.7	4.98	-	-	-	-
Butler, MO	1995	-	0.54	0.72	0.44	1.20	0.26
Butler, MO	1996	-	3.01	0.97	1.18	2.30	2.98
Butler, MO	1997	-	1.10	1.03	1.07	1.59	1.56
Butler, MO	1998	-	0.92	0.84	0.69	1.64	1.30
Vermont, IL	1993	-	0.90	-	-	-	-
Vermont, IL	1994	17.3	10.28	-	-	-	-
Vermont, IL	1995	-	2.36	-	-	-	-
Vermont, IL	1996	-	1.20	1.34	-	1.62	-
Vermont, IL	1997	-	0.48	0.75	-	0.44	-
Vermont, IL	1998	-	0.58	0.53	-	0.74	-
Three Rivers, IN	1993	20.1	3.21	-	-	-	-
Three Rivers, IN	1994	-	0.58	-	-	-	-
Three Rivers, IN	1995	-	1.52	-	-	-	-
Three Rivers, IN	1996	-	0.93	0.57	-	1.20	-
Three Rivers, IN	1997	-	0.67	1.20	-	3.13	-
Three Rivers, IN	1998	-	2.54	0.77	-	2.34	-

Attachment 8

Probabilistic Assessment of Drinking Water and Dietary Exposure Combined

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Executive Summary

An assessment of the combined dose from drinking water ingestion and the 99.9th percentile dietary exposure is presented. The dose is the total milligrams of chlorotriazines per kilogram of body weight per day.

The estimated distribution of the daily dose is determined for each of the 28 community water systems (CWSs) in the U.S.A. with some of the highest total chlorotriazine concentrations.

Within each CWS, the dose distribution is estimated for the general population served by each CWS as well as four subpopulations (Infants, Children 1 to 6, Children 7 to 12, and Adults 13 to 50). The probabilistic assessment evaluates four different exposure durations (acute, short-term, intermediate term, and chronic).

The estimated dose distributions describe the relative likelihood of different dose values in each CWS. Specifically, the estimated 1-th, 5-th, 10-th, 25-th, 50-th, 75-th, 90-th, 95-th, 99-th, and 99.9-th percentiles are reported.

The dose of total chlorotriazines from drinking water and dietary exposure is quite small (less than 0.5 to 1 μg/kg/day) even in the 28 CWSs with some of the highest total chlorotriazine concentrations.

In none of the 476 scenarios evaluated was the 99.9th percentile of the estimated dose distribution above the specified RfDs (includes a 1000x uncertainty factor) for acute, short-term, intermediate-term, and chronic exposure durations.

Based upon this analysis it is concluded that the total chlorotriazines residues of atrazine in diet and drinking water do not pose a risk to individuals drinking water from the CWSs with the highest total chlorotriazine concentrations.

1. Introduction

An assessment of the combined total chlorotriazine dose from drinking water ingestion and dietary exposure is presented. The dose is expressed as the total milligrams (mg) of chlorotriazines per kilogram (kg) of body weight per day (mg/kg-day). The estimated distribution of the daily dose is determined for each of 28 highly vulnerable community water systems (CWSs) discussed in EPA's Draft risk assessment of atrazine. Table 1 identifies these 28 CWSs.

In each of the 28 CWSs, the dose distribution is computed using five different measures of dose, namely,

1. Acute dose (daily dose) calculated from the daily total chlorotriazine concentrations,

2. Short-term dose (monthly average daily dose) calculated from the monthly average daily total chlorotriazine concentrations,

3. Intermediate-term dose (quarterly average daily dose) calculated from the quarterly average daily total chlorotriazine concentrations with the quarters defined as January to March, April to June, July to September, and October to December (i.e., Jan/Mar, Apr/Jun, Jul/Sep, and Oct/Dec),

4. Intermediate-term dose (quarterly average daily dose) calculated from the quarterly average daily total chlorotriazine concentrations with the quarters defined as February to April, May to July, August to October, and November to January (i.e., Feb/Apr, May/Jul, Aug/Oct, and Nov/Jan),

5. Chronic dose (chronic average daily dose) calculated from the chronic average daily total chlorotriazine concentration.

These estimated dose distributions describe the relative likelihood of different doses for individuals drinking water from each CWS. Specifically, the estimated 1-th, 5-th, 10-th, 25-th, 50-th, 75-th, 90-th, 95-th, 99-th, and 99.9-th percentiles are reported. The estimated percentage of the dose distribution below specified RfDs for acute, short-term, intermediate-term, and chronic exposure durations are also reported for infants, children ages 1-6, children ages 7-12, males and females ages 13 to 50, and the general population as follows:

Table	Dose	RfD (mg/kg-day)*				
		Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
7	Acute	Not Applicable	Not Applicable	Not Applicable	0.01	Not Applicable
8	Short Term	0.013	0.0063	0.0063	0.005	0.005
9	Intermediate Term	0.013	0.0063	0.0063	0.005	0.005
10	Intermediate Term	0.013	0.0063	0.0063	0.005	0.005
11	Chronic	Not Applicable	Not Applicable	Not Applicable	Not Applicable	0.0018

* RfD = NOEL/Uncertainty Factor where UF = 1000

The details of the calculations performed to estimate the dose distribution for each population and subpopulation, each exposure duration, and each of the 28 CWSs are described in Appendix A.

Tables of the estimated dose distributions for each population and subpopulation, each exposure duration, and each of the 28 CWSs are provided in Appendix B.

2. Results

The estimated dose distributions in Appendix B describe the relative likelihood of different dose for individuals drinking water from each CWS. The estimated 1-th, 5-th, 10-th, 25-th, 50-th, 75-th, 90-th, 95-th, 99-th, and 99.9-th percentiles are reported in Appendix B for the 28 CWSs, the different populations and subpopulations, and the different exposure durations.
The estimated percentage of the dose distribution below specified RfDs for acute, short-term, intermediate-term, and chronic exposure durations are also reported.

In order to compare the estimated dose distributions for the 28 CWSs, two sets of summary tables have been prepared. In the first set of five summary tables (Tables 2 to 6), the estimated dose at the 99.9^{th} percentile is given for each of the 28 CWSs for the acute, short-term, intermediate-term and chronic exposure and different subpopulations.

Table 2	Acute Dose	Daily Dose
Table 3	Short-Term Dose	Monthly Average Daily Dose
Table 4	Intermediate-Term Dose	Quarterly Average Daily Dose Quarters (Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)
Table 5	Intermediate-Term Dose	Quarterly Average Daily Dose Quarters (Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)
Table 6	Chronic Dose	Chronic Average Daily Dose

The results indicate that, for these 28 CWSs, exposure to total chlorotriazine in diet and water is low, even at the 99.9th percentile of the dose distribution (see Tables 2 to 6).

The data summarized in Tables 7 to 11 indicate that the distribution of daily doses were below the appropriate reference dose specified for each age group and duration of exposure, even at the 100th percentile in 465 out of 476 of the scenarios evaluated.

Table	Basis for Reference Dose	Number of Estimated Dose Distributions for 476 Scenarios Evaluated that Exceeded the RfD at the 100th Percentile*				
		Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
7	Acute	Not Applicable	Not Applicable	Not Applicable	0	Not Applicable
8	Short Term	1	1	1	0	4
9	Intermediate Term	0	0	0	0	2
10	Intermediate Term	0	0	0	0	2
11	Chronic	Not Applicable	Not Applicable	Not Applicable	Not Applicable	0

* RfD = NOEL/Uncertainty Factor where UF = 1000

The distribution of daily doses were all below the reference dose at the 99.9th percentile for all exposure durations and age groups.

Table	Basis for Reference Dose	Number of Estimated Dose Distributions for 476 Scenarios Evaluated that Exceeded the RfD at the 100th Percentile*				
		Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
7	Acute	Not Applicable	Not Applicable	Not Applicable	0	Not Applicable
8	Short Term	0	0	0	0	0
9	Intermediate Term	0	0	0	0	0
10	Intermediate Term	0	0	0	0	0
11	Chronic	Not Applicable	Not Applicable	Not Applicable	Not Applicable	0

* RfD = NOEL/Uncertainty Factor where UF = 1000

It should be noted that even in the CWS with the highest exposure (Salem, Illinois) and for the most sensitive subpopulations (infants, females ages 13-50), the distribution of doses were substantially below the RfD (Figures 1 to 5). In this analysis the vast majority of estimated doses were less than 1μg/kg body weight. For the lifetime exposure of the general population in this CWS, the doses were all less than 0.5 μg/kg/day.

3. Conclusions

This probabilistic assessment indicates that the dose of total chlorotriazines from drinking water and dietary exposure is quite small even in the 28 CWSs with some of the highest total chlorotriazine concentrations. Within each CWS, the estimated dose distribution is evaluated for the general population served by each CWS as well as four subpopulations (Infants, Children 1 to 6, Children 7 to 12, and Adults 13 to 50). The probabilistic assessment evaluates four different exposure durations (acute, short-term, intermediate term, and chronic).

The estimated dietary intake for females age 13 to 50 years is 3×10^{-6} mg/kg-day which is less than or equal to that for males (6×10^{-6} mg/kg-day for ages 13 to 19 and 3×10^{-6} mg/kg-day for ages 20 to 50). The estimated distribution of water intake (ml/kg-day) is the same for males and females. Hence, the chlorotriazine doses for males are greater than the doses for females, and the estimated dose distribution for the subpopulation Adults 13 to 50 is an upper bound on the estimated dose distribution for Females 13 to 50. Specifically, the percentage of doses for Females 13 to 50 below a value is greater than or equal to the percentage of doses for Adults 13 to 50 below that same value.

The percentage of the estimated dose distribution below specified RfDs for acute, short-term, intermediate-term, and chronic exposure durations summarized in Tables 7 to 11 indicate that 11 of the 476 scenarios analyzed exceeded the reference dose at the 100th percentile and none exceeded the RfD at the 99.9th percentile.

Among the 28 CWSs, even the smallest percentage of the estimated dose distribution below the specified RfD for the corresponding exposure duration is quite high for all exposure durations and populations and subpopulations.

Table	Dose	Smallest Percentage of the Estimated Dose Distribution Below the RfD among the 28 CWSs*				
		Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
7	Acute	Not Applicable	Not Applicable	Not Applicable	100%	Not Applicable
8	Short Term	99.95%	99.98%	99.99%	100%	99.96%
9	Intermediate Term	100%	100%	100%	100%	99.98%
10	Intermediate Term	100%	100%	100%	100%	99.99%
11	Chronic	Not Applicable	Not Applicable	Not Applicable	Not Applicable	100%

* RfD = NOEL/Uncertainty Factor where UF = 1000

Based upon this analysis it is concluded that the total chlorotriazines residues of atrazine in diet and drinking water do not pose a risk to individuals drinking water even in those CWSs reporting the highest atrazine exposure.

Table 1. Location of the 28 Community Water Systems (CWSs) in the U.S.A. with some of the highest total chlorotriazine concentrations.

CWS Index	Location				
	CWS #	CWS Name	City	County	State
1.	IA5903011	Chariton Municipal Water Works	Chariton	Lucas	IA
2.	IL0050300	Sorento Water Treatment Plant	Sorento	Bond	IL
3.	IL0250100	Flora Water Treatment Plant	Flora	Clay	IL
4.	IL0470200	W. Salem Water Treatment Plant	West Salem	Edwards	IL
5.	IL0510150	Farnia Water Treatment Plant	Farnia	Fayette	IL
6.	IL0610400	White Hall Water Treatment Plant	White Hall	Greene	IL
7.	IL1170150	Carlinville Water Works	Carlinville	Macoupin	IL
8.	IL1170400	Gillespie Water Treatment Plant	Gillespie	Macoupin	IL
9.	IL1170500	Hettick Water Supply	Hettick	Macoupin	IL
10.	IL1170950	Shipman Water Treatment Plant	Shipman	Macoupin	IL
11.	IL1175150	Palmyra-Modesto Water Commission	N Palmyra Twp	Macoupin	IL
12.	IL1175200	ADGPTV Water Commission	North Otter Twp	Macoupin	IL
13.	IL1210300	Kinmundy Water Treatment Plant	Kinmundy	Marion	IL
14.	IL1210450	Salem Water Treatment Plant	Salem	Marion	IL
15.	IL1214220	Centralia Water Treatment Plant	Centralia	Marion	IL
16.	IL1350300	Hillsboro Water Treatment Plant	Hillsboro	Montgomery	IL
17.	IL1910450	Wayne City Water Plant	Wayne City	Wayne	IL
18.	IL0250250	Louisville Water Treatment Plant	Louisville	Clay	IL
19.	IN5219006	Holland Water Department	Holland	Dubois	IL
20.	IN5240008	North Vernon Water Department	North Vernon	Jennings	IN
21.	IN5269001	Batesville Water Utility	Batesville	Ripley	IN
22.	IN5272001	Scottsburg Water Treatment Plant	Scottsburg	Scott	IN
23.	LA1047002	Iberville Water District #3	White Castle	Iberville	LA
24.	MO1010363	Higginsville Water Treatment Plant	Higginsville	Lafayette	MO
25.	MO2010112	Bucklin Water Department		Linn	MO
26.	M02010812	Vandalia Water Treatment Plant	Vandalia	Audrain	MO
27.	OH0801511	Sardinia Water Treatment Plant	Sardinia	Brown	OH
28.	OH4502314	Newark Water Works	Newark	Licking	OH

Table 2. Estimated total chlorotriazine daily doses (Acute) at the 99.9th percentile

CWS Index	**Acute Daily Dose (mg/kg-day) at the 99.9th Percentile for Adults Ages 13 – 50 Years**
1.	6.40E-04
2.	5.20E-04
3.	8.80E-04
4.	7.50E-04
5.	9.10E-04
6.	8.30E-04
7.	9.40E-04
8.	1.90E-03
9.	2.00E-03
10.	1.80E-03
11.	1.10E-03
12.	9.60E-04
13.	7.50E-04
14.	3.00E-03
15.	1.20E-03
16.	1.10E-03
17.	1.40E-03
18.	1.00E-03
19.	8.70E-04
20.	1.10E-03
21.	8.00E-04
22.	8.90E-04
23.	1.40E-03
24.	1.00E-03
25.	7.30E-04
26.	1.20E-03
27.	2.20E-03
28.	9.20E-04

Table 3. Estimated monthly average (Short-Term) total chlorotriazine daily doses at the 99.9th percentile

CWS Index	**Monthly Average Daily Dose (mg/kg-day) at the 99.9th Percentile**				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1.	2.40E-03	1.00E-03	8.60E-04	5.70E-04	6.90E-04
2.	2.20E-03	9.00E-04	8.20E-04	5.20E-04	6.80E-04
3.	3.20E-03	1.20E-03	1.10E-03	6.90E-04	1.10E-03
4.	3.30E-03	1.20E-03	1.00E-03	7.70E-04	1.10E-03
5.	3.10E-03	1.30E-03	1.20E-03	7.80E-04	1.00E-03
6.	3.50E-03	1.50E-03	1.20E-03	8.00E-04	1.30E-03
7.	2.80E-03	1.20E-03	1.10E-03	6.60E-04	9.70E-04
8.	8.20E-03	3.00E-03	2.40E-03	1.70E-03	2.20E-03
9.	7.20E-03	2.50E-03	2.40E-03	1.80E-03	2.50E-03
10.	7.10E-03	2.90E-03	2.70E-03	1.80E-03	2.40E-03
11.	4.30E-03	1.80E-03	1.50E-03	1.10E-03	1.40E-03
12.	3.50E-03	1.30E-03	1.00E-03	7.60E-04	1.10E-03
13.	2.70E-03	1.00E-03	9.00E-04	7.20E-04	9.20E-04
14.	1.20E-02	4.50E-03	4.20E-03	2.70E-03	3.40E-03
15.	4.80E-03	2.10E-03	1.80E-03	1.10E-03	1.60E-03
16.	5.60E-03	1.60E-03	1.50E-03	1.10E-03	1.40E-03
17.	4.20E-03	1.60E-03	1.10E-03	1.10E-03	1.10E-03
18.	3.90E-03	1.70E-03	1.60E-03	9.10E-04	1.30E-03
19.	3.70E-03	1.60E-03	1.30E-03	8.30E-04	1.10E-03
20.	3.70E-03	1.60E-03	1.30E-03	8.10E-04	1.00E-03
21.	3.20E-03	1.30E-03	1.10E-03	7.70E-04	9.00E-04
22.	4.00E-03	1.60E-03	1.40E-03	8.70E-04	1.50E-03
23.	4.20E-03	1.80E-03	1.40E-03	9.80E-04	1.40E-03
24.	4.30E-03	1.80E-03	1.60E-03	1.00E-03	1.60E-03
25.	2.70E-03	1.10E-03	1.10E-03	7.30E-04	9.70E-04
26.	4.80E-03	1.70E-03	1.50E-03	1.00E-03	1.50E-03
27.	9.30E-03	3.80E-03	3.00E-03	2.10E-03	2.60E-03
28.	2.10E-03	7.40E-04	6.20E-04	4.40E-04	6.20E-04

Table 4. Estimated quarterly average (Intermediate-Term) total chlorotriazine daily doses at the 99.9th percentile

CWS Index	Quarterly Average Daily Dose (mg/kg-day) at the 99.9th Percentile Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1.	2.10E-03	8.20E-04	6.60E-04	4.60E-04	5.00E-04
2.	1.80E-03	8.20E-04	7.00E-04	4.40E-04	7.20E-04
3.	2.10E-03	8.80E-04	8.50E-04	5.40E-04	8.10E-04
4.	2.60E-03	1.20E-03	9.00E-04	6.20E-04	8.20E-04
5.	2.80E-03	1.00E-03	9.60E-04	6.80E-04	8.90E-04
6.	3.30E-03	1.50E-03	1.20E-03	7.70E-04	1.30E-03
7.	2.10E-03	9.20E-04	7.80E-04	5.10E-04	7.90E-04
8.	5.80E-03	2.10E-03	1.80E-03	1.40E-03	1.60E-03
9.	5.10E-03	2.10E-03	1.80E-03	1.20E-03	1.80E-03
10.	6.90E-03	2.90E-03	2.80E-03	1.50E-03	2.80E-03
11.	4.10E-03	1.70E-03	1.60E-03	9.70E-04	1.50E-03
12.	2.30E-03	9.60E-04	8.70E-04	5.40E-04	9.90E-04
13.	2.30E-03	9.40E-04	8.50E-04	5.30E-04	8.50E-04
14.	7.10E-03	2.80E-03	2.30E-03	1.70E-03	2.20E-03
15.	3.10E-03	1.40E-03	1.20E-03	7.50E-04	1.10E-03
16.	3.10E-03	1.10E-03	1.00E-03	7.70E-04	9.00E-04
17.	2.20E-03	9.20E-04	8.10E-04	5.20E-04	8.10E-04
18.	3.00E-03	1.30E-03	1.20E-03	7.10E-04	1.00E-03
19.	3.60E-03	1.50E-03	1.20E-03	8.30E-04	1.00E-03
20.	2.10E-03	8.70E-04	8.10E-04	5.30E-04	7.30E-04
21.	3.30E-03	1.20E-03	1.00E-03	7.80E-04	9.00E-04
22.	3.90E-03	1.60E-03	1.30E-03	8.70E-04	1.10E-03
23.	2.00E-03	8.80E-04	8.10E-04	4.90E-04	8.60E-04
24.	3.20E-03	1.30E-03	1.20E-03	7.80E-04	1.20E-03
25.	2.90E-03	1.20E-03	1.00E-03	7.30E-04	8.90E-04
26.	2.80E-03	1.20E-03	9.70E-04	6.40E-04	1.10E-03
27.	6.30E-03	2.60E-03	2.40E-03	1.40E-03	1.90E-03
28.	1.30E-03	5.80E-04	5.60E-04	3.30E-04	4.90E-04

Table 5. Estimated quarterly average (Intermediate-Term) total chlorotriazine daily doses at the 99.9th percentile

CWS Index	Quarterly Average Daily Dose (mg/kg-day) at the 99.9th Percentile Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1.	2.00E-03	8.60E-04	7.40E-04	5.00E-04	6.00E-04
2.	1.80E-03	7.90E-04	7.30E-04	4.40E-04	6.60E-04
3.	2.10E-03	8.90E-04	8.00E-04	5.50E-04	7.60E-04
4.	2.20E-03	9.70E-04	8.70E-04	5.20E-04	8.40E-04
5.	2.50E-03	9.60E-04	8.90E-04	6.00E-04	9.50E-04
6.	3.30E-03	1.40E-03	1.20E-03	7.60E-04	1.30E-03
7.	2.30E-03	1.00E-03	9.10E-04	5.60E-04	8.60E-04
8.	6.00E-03	2.50E-03	2.00E-03	1.40E-03	1.60E-03
9.	6.20E-03	2.30E-03	2.10E-03	1.50E-03	2.00E-03
10.	6.80E-03	2.90E-03	2.70E-03	1.80E-03	2.30E-03
11.	4.30E-03	1.80E-03	1.60E-03	9.60E-04	1.50E-03
12.	2.60E-03	1.10E-03	9.40E-04	6.50E-04	1.00E-03
13.	2.50E-03	9.30E-04	8.30E-04	6.00E-04	8.10E-04
14.	7.20E-03	3.10E-03	2.70E-03	1.70E-03	2.40E-03
15.	2.90E-03	1.30E-03	1.20E-03	7.00E-04	1.20E-03
16.	3.00E-03	1.30E-03	1.10E-03	7.20E-04	9.90E-04
17.	2.60E-03	9.70E-04	8.70E-04	6.20E-04	7.50E-04
18.	3.20E-03	1.30E-03	1.20E-03	7.50E-04	1.00E-03
19.	2.90E-03	1.30E-03	1.20E-03	7.40E-04	9.50E-04
20.	2.70E-03	1.00E-03	8.50E-04	6.80E-04	8.20E-04
21.	2.90E-03	1.20E-03	9.80E-04	7.40E-04	8.20E-04
22.	3.10E-03	1.30E-03	1.20E-03	7.30E-04	1.10E-03
23.	2.80E-03	1.20E-03	1.10E-03	6.30E-04	9.70E-04
24.	4.30E-03	1.60E-03	1.40E-03	9.40E-04	1.20E-03
25.	2.70E-03	1.10E-03	1.10E-03	5.80E-04	1.10E-03
26.	2.70E-03	1.10E-03	1.00E-03	6.90E-04	1.10E-03
27.	7.50E-03	3.00E-03	2.80E-03	1.80E-03	2.30E-03
28.	1.20E-03	5.10E-04	4.80E-04	3.20E-04	5.30E-04

Table 6. Estimated lifetime average (Chronic) total chlorotriazine daily doses at the 99.9th percentile

CWS Index	**Chronic Average Daily Dose (mg/kg-day) at the 99.9th Percentile for the General Population**
1.	1.70E-04
2.	1.90E-04
3.	1.80E-04
4.	2.80E-04
5.	3.20E-04
6.	2.30E-04
7.	2.80E-04
8.	2.70E-04
9.	5.70E-04
10.	4.50E-04
11.	3.70E-04
12.	3.40E-04
13.	1.60E-04
14.	3.40E-04
15.	2.90E-04
16.	2.60E-04
17.	1.90E-04
18.	2.50E-04
19.	1.80E-04
20.	1.50E-04
21.	2.40E-04
22.	1.80E-04
23.	2.20E-04
24.	2.40E-04
25.	1.30E-04
26.	2.80E-04
27.	1.90E-04
28.	1.00E-04

Table 7. Percentage of the estimated distribution of the ACUTE DOSE below the acute RfD

CWS Index	**Percentage Below Acute RfD for Adults Ages 13 – 50 Years**
1.	100%
2.	100%
3.	100%
4.	100%
5.	100%
6.	100%
7.	100%
8.	100%
9.	100%
10.	100%
11.	100%
12.	100%
13.	100%
14.	100%
15.	100%
16.	100%
17.	100%
18.	100%
19.	100%
20.	100%
21.	100%
22.	100%
23.	100%
24.	100%
25.	100%
26.	100%
27.	100%
28.	100%

Table 8. Percentage of the estimated distribution of the SHORT-TERM DOSE below the short-term RfD

CWS Index	**Percentage Below Short-Term RfD**				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1.	100%	100%	100%	100%	100%
2.	100%	100%	100%	100%	100%
3.	100%	100%	100%	100%	100%
4.	100%	100%	100%	100%	100%
5.	100%	100%	100%	100%	100%
6.	100%	100%	100%	100%	100%
7.	100%	100%	100%	100%	100%
8.	100%	100%	100%	100%	100%
9.	100%	100%	100%	100%	100%
10.	100%	100%	100%	100%	99.99%
11.	100%	100%	100%	100%	100%
12.	100%	100%	100%	100%	100%
13.	100%	100%	100%	100%	100%
14.	99.95%	99.98%	99.99%	100%	99.96%
15.	100%	100%	100%	100%	100%
16.	100%	100%	100%	100%	99.99%
17.	100%	100%	100%	100%	100%
18.	100%	100%	100%	100%	100%
19.	100%	100%	100%	100%	100%
20.	100%	100%	100%	100%	100%
21.	100%	100%	100%	100%	100%
22.	100%	100%	100%	100%	100%
23.	100%	100%	100%	100%	100%
24.	100%	100%	100%	100%	100%
25.	100%	100%	100%	100%	100%
26.	100%	100%	100%	100%	100%
27.	100%	100%	100%	100%	99.98%
28.	100%	100%	100%	100%	100%

Table 9. Percentage of the estimated distribution of the INTERMEDIATE-TERM DOSE below the intermediate-term RfD

CWS Index	**Percentage Below Intermediate-Term RfD Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec**				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1.	100%	100%	100%	100%	100%
2.	100%	100%	100%	100%	100%
3.	100%	100%	100%	100%	100%
4.	100%	100%	100%	100%	100%
5.	100%	100%	100%	100%	100%
6.	100%	100%	100%	100%	100%
7.	100%	100%	100%	100%	100%
8.	100%	100%	100%	100%	100%
9.	100%	100%	100%	100%	100%
10.	100%	100%	100%	100%	99.98%
11.	100%	100%	100%	100%	100%
12.	100%	100%	100%	100%	100%
13.	100%	100%	100%	100%	100%
14.	100%	100%	100%	100%	99.99%
15.	100%	100%	100%	100%	100%
16.	100%	100%	100%	100%	100%
17.	100%	100%	100%	100%	100%
18.	100%	100%	100%	100%	100%
19.	100%	100%	100%	100%	100%
20.	100%	100%	100%	100%	100%
21.	100%	100%	100%	100%	100%
22.	100%	100%	100%	100%	100%
23.	100%	100%	100%	100%	100%
24.	100%	100%	100%	100%	100%
25.	100%	100%	100%	100%	100%
26.	100%	100%	100%	100%	100%
27.	100%	100%	100%	100%	100%
28.	100%	100%	100%	100%	100%

Table 10. Percentage of the estimated distribution of the INTERMEDIATE-TERM DOSE below the intermediate-term RfD

CWS Index	**Percentage Below Intermediate-Term RfD Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan**				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1.	100%	100%	100%	100%	100%
2.	100%	100%	100%	100%	100%
3.	100%	100%	100%	100%	100%
4.	100%	100%	100%	100%	100%
5.	100%	100%	100%	100%	100%
6.	100%	100%	100%	100%	100%
7.	100%	100%	100%	100%	100%
8.	100%	100%	100%	100%	100%
9.	100%	100%	100%	100%	100%
10.	100%	100%	100%	100%	99.99%
11.	100%	100%	100%	100%	100%
12.	100%	100%	100%	100%	100%
13.	100%	100%	100%	100%	100%
14.	100%	100%	100%	100%	99.99%
15.	100%	100%	100%	100%	100%
16.	100%	100%	100%	100%	100%
17.	100%	100%	100%	100%	100%
18.	100%	100%	100%	100%	100%
19.	100%	100%	100%	100%	100%
20.	100%	100%	100%	100%	100%
21.	100%	100%	100%	100%	100%
22.	100%	100%	100%	100%	100%
23.	100%	100%	100%	100%	100%
24.	100%	100%	100%	100%	100%
25.	100%	100%	100%	100%	100%
26.	100%	100%	100%	100%	100%
27.	100%	100%	100%	100%	100%
28.	100%	100%	100%	100%	100%

Table 11. Percentage of the estimated distribution of the CHRONIC DOSE below the chronic RfD

CWS Index	**Percentage Below Chronic RfD (0.0018 mg/kg-day) for the General Population**
1.	100%
2.	100%
3.	100%
4.	100%
5.	100%
6.	100%
7.	100%
8.	100%
9.	100%
10.	100%
11.	100%
12.	100%
13.	100%
14.	100%
15.	100%
16.	100%
17.	100%
18.	100%
19.	100%
20.	100%
21.	100%
22.	100%
23.	100%
24.	100%
25.	100%
26.	100%
27.	100%
28.	100%

Figure 1. Estimated total chlorotriazine acute dose distribution for the CWS with the highest exposure (Salem, Illinois)

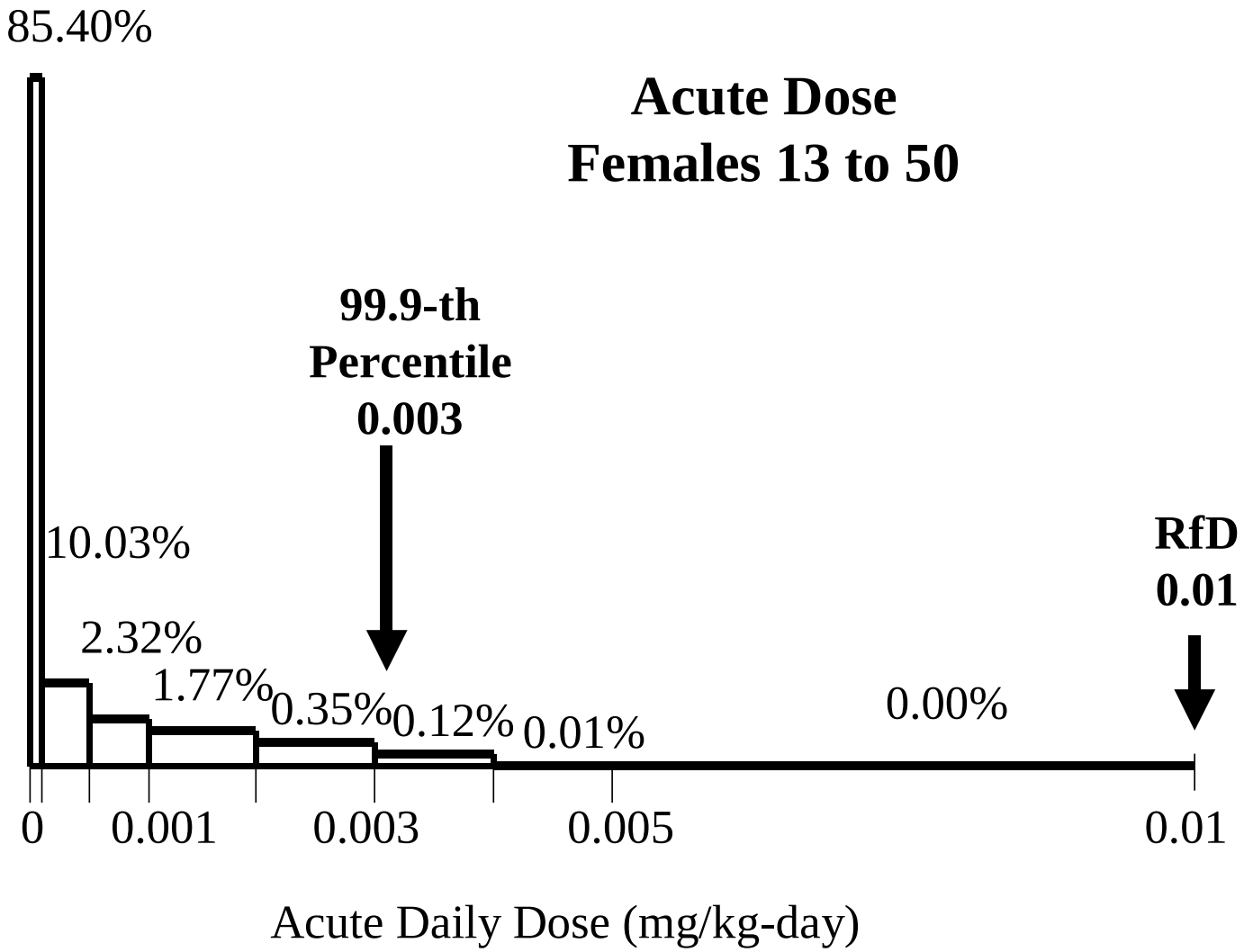


Figure 2. Estimated total chlorotriazine short-term dose distribution for the CWS with the highest exposure (Salem, Illinois)

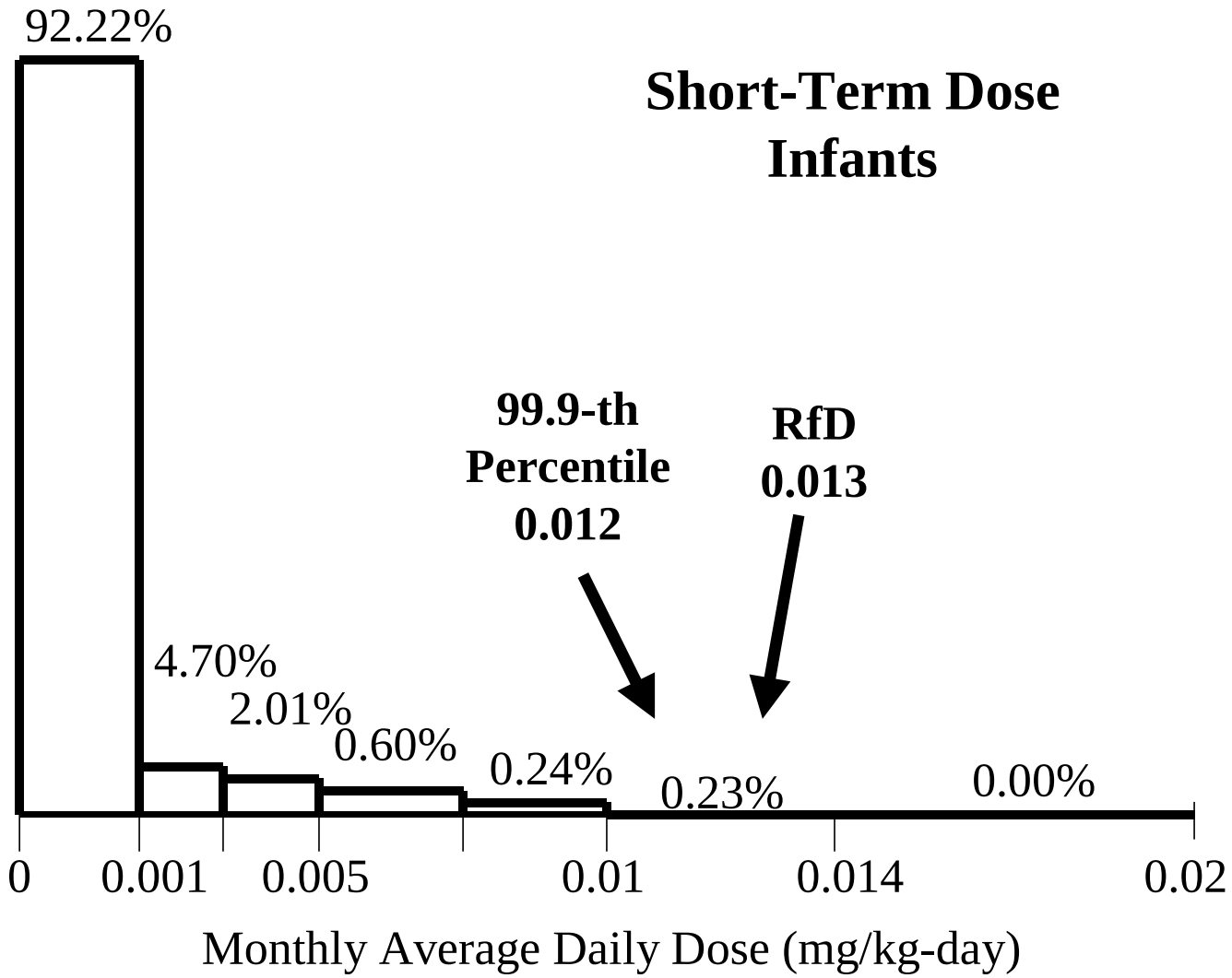


Figure 3. Estimated total chlorotriazine intermediate-term dose distribution for the CWS with the highest exposure (Salem, Illinois): (Quarters: January to March, April to June, July to September, October to December)

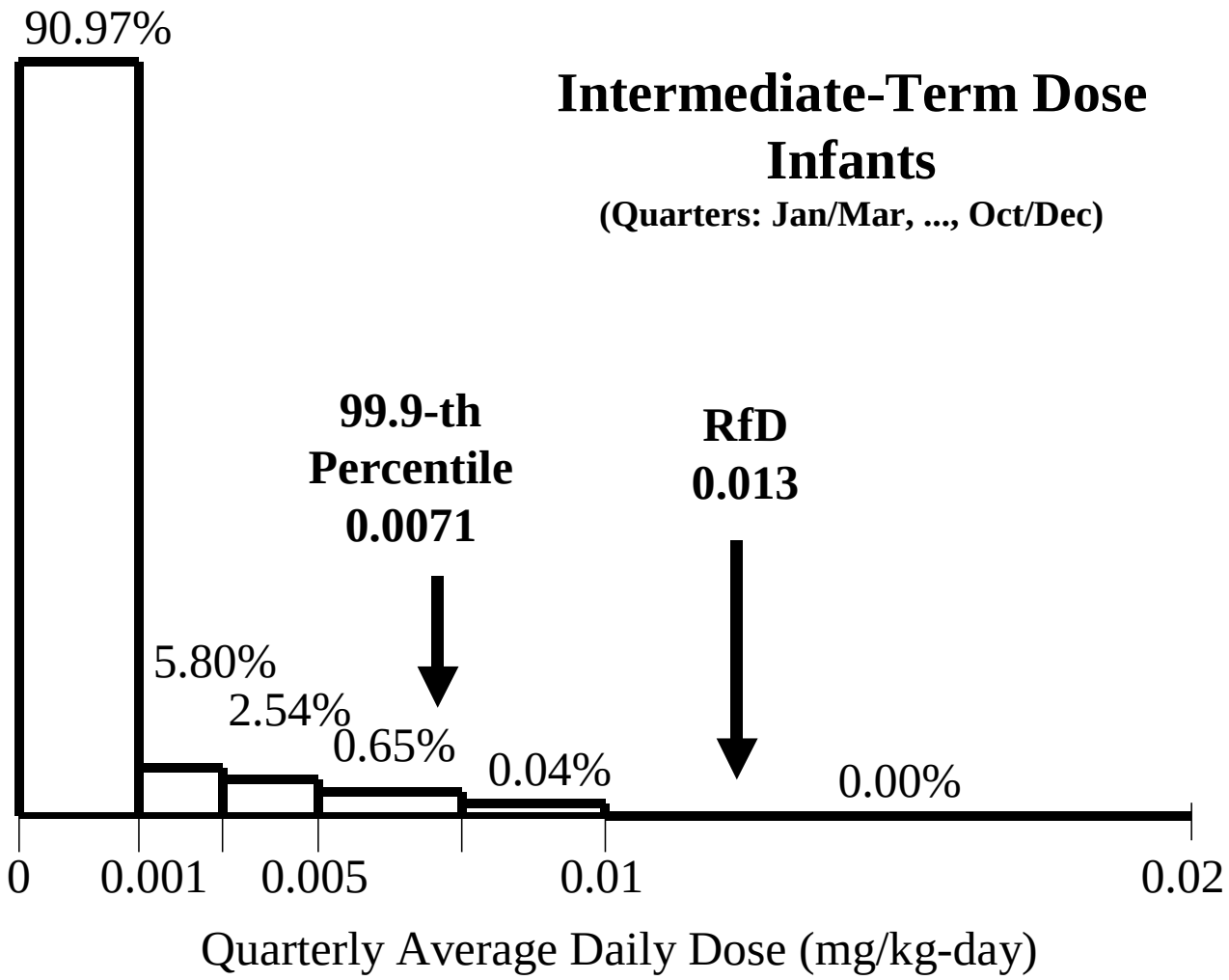


Figure 4. Estimated total chlorotriazine intermediate-term dose distribution for the CWS with the highest exposure (Salem, Illinois): (Quarters: February to April, May to July, August to October, November to January)

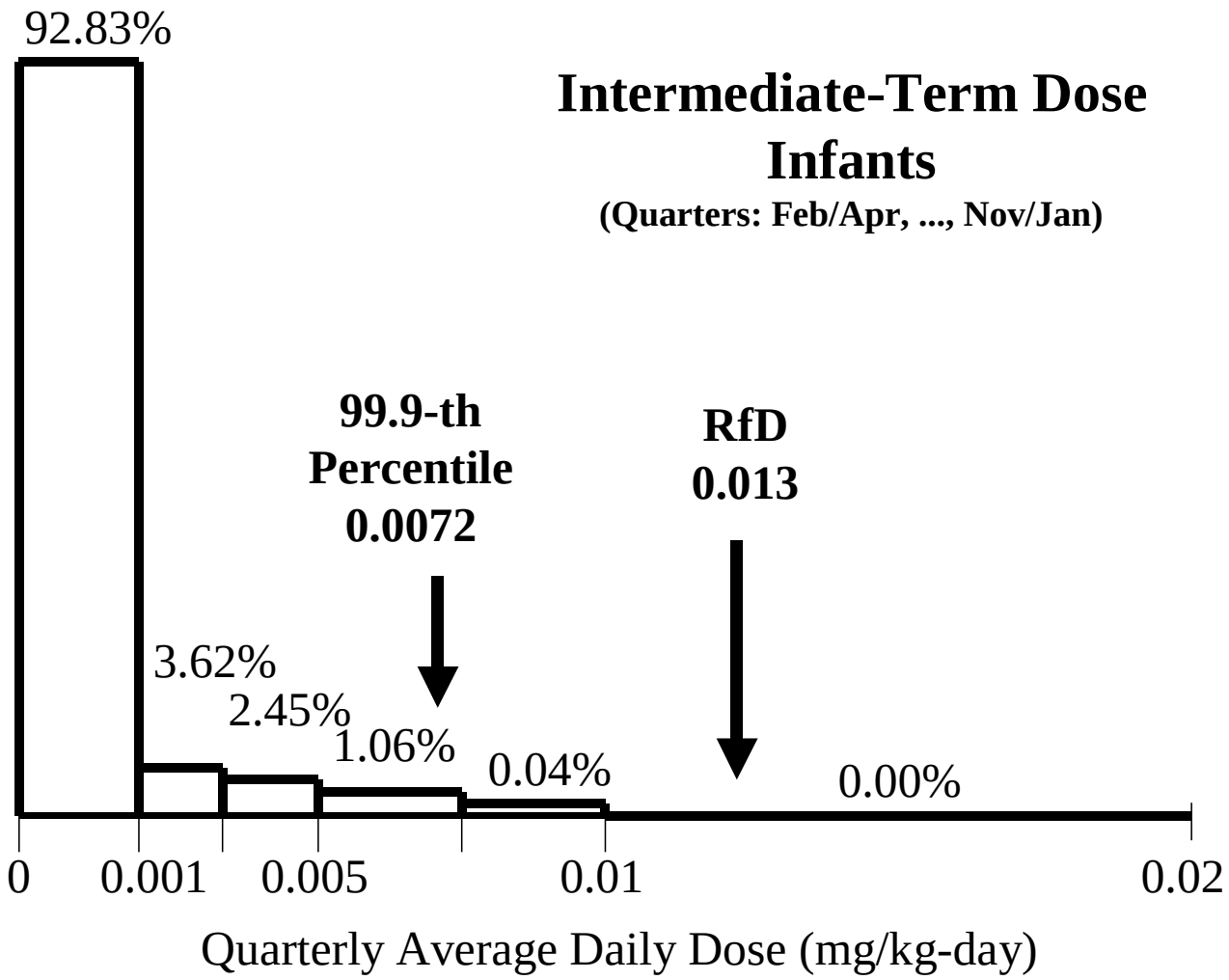
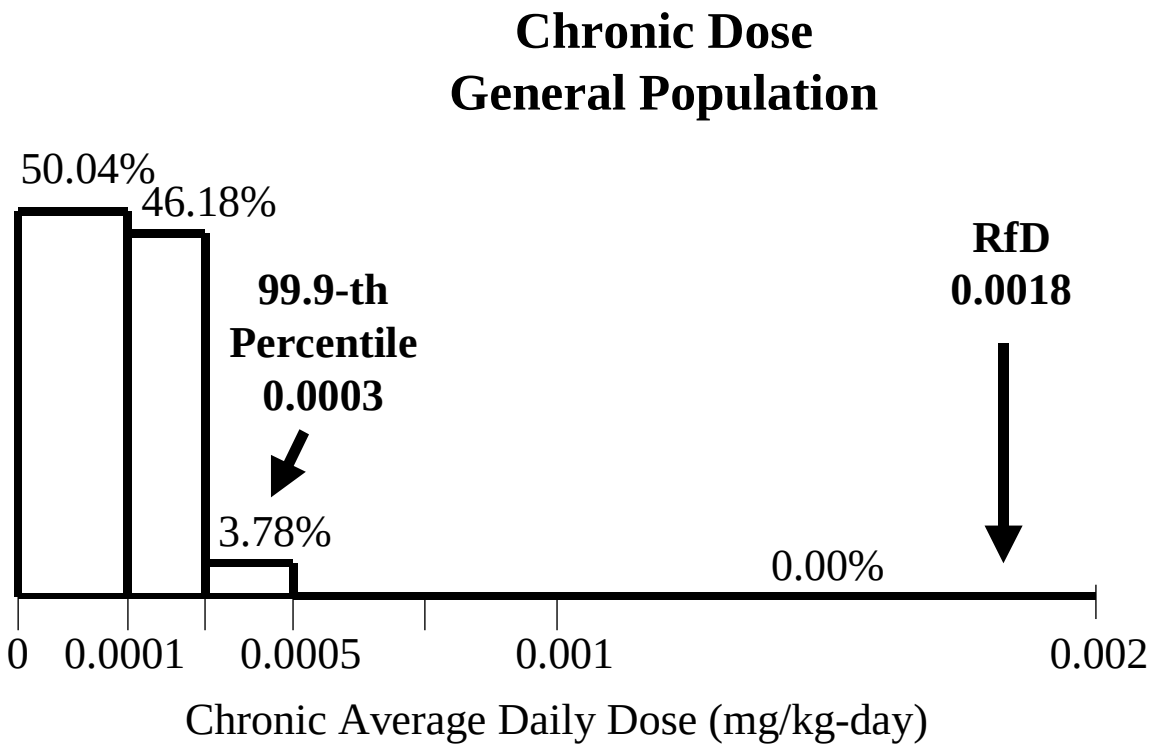


Figure 5. Estimated total chlorotriazine chronic dose (70 year lifetime average daily dose) distribution for the CWS with the highest exposure (Salem, Illinois)



Appendix A

Details of the Calculations

Performed to Estimate the Dose Distribution

for Each of the 28 CWSs,

Each Population and Subpopulation,

and Each Exposure Duration

The details of the calculations performed to estimate the dose distribution for each of the 28 CWSs, each exposure duration, and each population and subpopulation are described in this Appendix.

A.1 Triazine Concentration Data

Daily Concentrations

The total chlorotriazine concentration in the drinking water is based on the integrated triazine surface water data from 3 sources (PLEX, VMP, and ARP) combined. The total chlorotriazine concentration is calculated using EPA's regression equations.

The total chlorotriazine concentrations for individual days are determined as follows:

1. The calculated total chlorotriazine concentrations from the 3 sources are pooled into a single dataset.

2. If there is more than one observation on the same day, then that day's total chlorotriazine concentration is defined to be the average of the observations on that day.

3. The total chlorotriazine concentration for all days in the month of the first observation before the day of the first observation are defined to be equal to the total chlorotriazine concentration on the first observation day.

4. The total chlorotriazine concentration for all days in the month of the last observation after the last observation are defined to be

equal to the total chlorotriazine concentration on the last observation day.

5. For the first half of the days between two observations, the total chlorotriazine concentration is defined to be equal to the concentration for the first observation day; for the second half of the days between two observations, the total chlorotriazine concentration is defined to be equal to the concentration for the second observation day.

For example, for the Salem Water Treatment Plant in Salem, Illinois (CWS Index 14 in Table 1), the first two observations and the last two observations are

1/19/1993: 0.58 ppb
4/13/1993: 0.51 ppb

10/30/2000: 0.325 ppb
11/13/2000: 0.245 ppb.

Using (3), from 1/1/93 to 1/18/93 the concentration is 0.58 ppb. Using (4), from 11/14/00 to 11/31/00 the concentration is 0.245 ppb. Using (5), from 1/20/93 to 3/2/93 the concentration is 0.58 ppb. (There are 84 days from 1/19/93 to 4/13/93; half of 84 is 42; 42 days from 1/19/93 is 3/2/93.) Using (5), from 11/1/00 to 11/6/00 the concentration is 0.325 ppb. (There are 14 days from 10/30/00 to 11/13/00; half of 14 is 7; 7 days from 10/30/00 is 11/6/00.)

The total chlorotriazine concentration profile over days is a step function corresponding to the integrated triazine surface water data from 3 sources (PLEX, VMP, and ARP) combined.

Only days from the month of the first observation to the month of the last observation are used to determine the probability distribution of the daily concentration.

Monthly Concentrations

The monthly averages of the daily total chlorotriazine concentrations are determined. The days per month are the days in a 365-day year; that is, 31 days in January, 28 days in February, etc.

Only the months from the month of the first observation to the month of the last observation are used to determine the probability distribution of the monthly average daily concentration.

Quarterly Concentrations

The quarterly average of the daily total chlorotriazine concentrations are determined.

The first definition for quarters is January to March, April to June, July to September, and October to December (i.e., Jan/Mar, Apr/Jun, Jul/Sep, and Oct/Dec). The quarterly average concentration is the average of the daily total chlorotriazine concentrations in the quarter. (That is, 90 days in Jan/Mar, 91 days in Apr/Jun, 92 days in Jul/Sep, and 92 days in Oct/Dec.)

The second definition for quarters is February to April, May to July, August to October, and November to January (i.e., Feb/Apr, May/Jul, Aug/Oct, and Nov/Jan). The quarterly average concentration is the average of the daily total chlorotriazine concentrations in the quarter. (That is, 89 days in Feb/Apr, 92 days in May/Jul, 92 days in Aug/Oct, and 92 days in Nov/Jan.)

The second definition of quarters is considered to evaluate the potential effect of the second quarterly average concentration being potentially higher for May/Jul than Apr/Jun.

Daily concentrations for days in the first quarter before the first observation day are set equal to the concentration on the first observation day. Daily concentrations for days in the last quarter after the last observation day are set equal to the concentration on the last observation day.

Only the quarters from the quarter of the first observation to the quarter of the last observation are used to determine the probability distribution of the quarterly average daily concentration.

A.2 Calculation of Dose

The daily dose of total chlorotriazines is calculated using the following equation:

$$\text{Dose} = \text{DietDose} + \text{WaterIngested} \times \text{CWS Conc.} \times \text{Conversion Factor.}$$

This equation combines the dietary dose (DietDose) with the dose from drinking water ingestion. The dose from drinking water ingestion is

$$\text{WaterIngested} \times \text{CWS Conc.} \times \text{Conversion Factor.}$$

The dose from drinking water ingestion is the volume of water ingested (WaterIngested) times the CWSs total chlorotriazine concentration (CWS Conc.) times the factor converting the product to mg/kg-day (Conversion Factor).

Input

The dietary doses are the following age-specific results from EPA's chronic assessment for atrazine and its chlorinated metabolites:

DietDose = 8×10^{-6}	mg/kg-day	for Infants
DietDose = 1.7×10^{-5}	mg/kg-day	for Children 1 to 6
DietDose = 9.0×10^{-6}	mg/kg-day	for Children 7 to 12
DietDose = 3×10^{-6}	mg/kg-day	for Females 13 to 50
DietDose = 6×10^{-6}	mg/kg-day	for Males 13 to 19
DietDose = 3×10^{-6}	mg/kg-day	for Males 19 to 50
DietDose = 3×10^{-6}	mg/kg-day	for Seniors

WaterIngested is in units of ml/kg-day. CWS Conc. is in units of ppb (μg/kg). Thus, the Conversion Factor is

0.001 (liters/ml) x 0.001 (mg/μg) = 0.000001.

The WaterIngested is randomly generated from the following EPA distributions for drinking water ingestion (total tapwater intake):

Age	Percentiles of Water Intake (ml/kg-day)								
	1%	5%	10%	25%	50%	75%	90%	95%	99%
<1	0	0	0	16	57	101	156	170	218
1-10	0	4	6	12	21	33	49	64	98
11-19	0	2	4	7	13	20	30	39	64
20-44	1.6	4.9	7.1	11.2	16.8	23.7	32.2	38.4	53.4
45-64	4.4	8.0	10.3	14.7	20.2	27.2	35.5	42.1	57.8
65-74	4.6	8.7	10.9	15.1	20.2	27.2	35.2	40.6	51.6
75+	3.8	8.8	10.7	15.0	20.5	27.1	33.9	38.6	47.2

Sources:

For <1, 1-10, and 11-19: Table 4-2. Estimate of Total Direct and Indirect Water Ingestion, All Sources by Broad Age Category for U.S. Children (EPA 2000).

For 20-44, 45-64, 65-74, and 75+: Table 3-7 Total Tapwater Intake (ml/kg-day) for Both Sexes Combined. Exposure Factors Handbook (EPA, August 1997).

Distribution of Age and Gender in the County Supplied by the CWS

For each of the 28 CWSs, the county supplied by the CWS is identified. The 1990 U.S. Census data on age and gender in this county are identified.

For example, the Salem Water Treatment Plant (CWS Index 14 in Table 1) supplies Marion County, Illinois. The FIPS code for Marion County, Illinois, is 17121.

The Census data for this county imply that there are 19,784 males and 21,829 females in this county (i.e., approximately 47.54% male and 52.46% female).

The Census data for this county also imply the following information:

Age Group	Percentage of County Population	
	Males	Females
<1	0.00774	0.01502
<2	0.02156	0.02821
<3	0.03557	0.04210
etc.	etc.	etc.

Monte Carlo Calculation for Non-Chronic Exposures

A separate Monte Carlo analysis is done for each of the following exposure durations:

Acute	Day,
Short-Term	Month,
Intermediate	Quarter (Quarters: Jan/Mar, etc.),
Intermediate	Quarter (Quarters: Feb/Apr, etc.), and
Chronic	70 years.

Each Monte Carlo analysis includes 10,000 Monte Carlo simulations.

The non-chronic (acute, short-term, and intermediate-term) exposure durations are analyzed slightly differently than the chronic exposure durations.

For the non-chronic exposure durations, each of the following populations and subpopulations is evaluated separately:

Infants,
Children 1 to 6,
Children 7 to 12,
Adults 13 to 50, and
General Population.

For each subpopulation (Infants, Children 1 to 6, Children 7 to 12, and Adults) and each population (General Population, all ages), each of the 10,000 Monte Carlo simulations is performed as follows:

1. Using the Census implied distribution of age and gender in the county supplied by the CWS, randomly select an individual in the specified subpopulation of this county.

2. Determine the age- and gender-specific dietary dose (DietDose). These are the age- and gender-specific constants described above.

3. Randomly select a WaterIngested value from the age-specific distributions of total tapwater intake.

4. Randomly select a CWS Conc. value from the CWS-specific distribution of total chlorotriazine concentrations corresponding to the specified exposure duration:

Specified Exposure Duration	Distribution of Total Chlorotriazine Concentrations
Acute	Daily Conc.
Short-Term	Monthly Avg. Conc.
Intermediate-Term	Quarterly Avg. Conc. Quarters (Jan/Mar, ...)
Intermediate-Term	Quarterly Avg. Conc. Quarters (Feb/Apr, ...)

5. Calculate the estimated dose from dietary exposure and drinking water ingestion for this randomly selected individual to be

Dose =
DietDose + WaterIngested x CWS Conc. x Conversion Factor.

Repeating this procedure 10,000 times for each CWS, each population and subpopulation, and the four non-chronic exposure durations results in the estimated dose distributions.

Monte Carlo Calculation for Chronic Exposures

For the chronic exposure duration, 70 years of exposure are simulated for each individual. For each CWS, the total chlorotriazine concentration is the average daily concentration for that CWS. For each CWS, the population simulated is the population of all people served by the CWS. The proportion of males and females in the simulated population are the county-specific proportions.

For each CWS, each of the 10,000 Monte Carlo simulations is performed as follows:

1. Calculate the average of daily water concentrations from the first day of the month containing the first observation in the integrated triazine surface water data from 3 sources (PLEX, VMP, and ARP) combined to the last day of the month containing the last observation. This average is the Chronic CWS concentration. This value is the same for each simulation for a CWS.

2. Randomly determine the gender of the individual being simulated from the county-specific gender proportions.

3. Randomly select a percentage (0 to 100%) to use to determine the individual's age-specific water intakes. For example, if percentage is 20%, then the individual's water intake at each age is the 20-th percentile of the WaterIntake distribution for that age.

4. Sum the age- and gender-specific dietary dose and the age-specific drinking water ingestion dose over all ages from 0 to 70. That is, sum

   DietDose +
   WaterIntake x Chronic CWS Concentration x Conversion Factor
   over all ages from 0 through 69 (that is, from birth to the 70-th birthday, 70 years). The sum is the sum of 70 yearly values.

5. The simulated Chronic Average Daily Dose (mg/kg-day) is the sum divided by 70.

Repeating this procedure 10,000 times for each CWS results in the estimated dose distributions for chronic exposure.

Appendix B

Tables of the Estimated Distributions of Dose from Drinking Water Ingestion and Dietary Exposure for Each of 28 Community Water Systems in the U.S.A. with Some of the Highest Total chlorotriazine Concentrations

Table 1.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Chariton Municipal Water Works, Chariton, Lucas County, Iowa					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				4.10E-06	
5%				7.30E-06	
10%				1.00E-05	
25%				1.70E-05	
50%				3.10E-05	
75%				5.50E-05	
90%				9.80E-05	
95%				1.50E-04	
99%				3.40E-04	
99.9%				6.40E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 1.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Chariton Municipal Water Works, Chariton, Lucas County, Iowa					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.50E-05	7.40E-06	5.10E-06	6.00E-06
5%	8.00E-06	2.00E-05	1.10E-05	8.60E-06	1.00E-05
10%	8.00E-06	2.40E-05	1.40E-05	1.20E-05	1.30E-05
25%	3.60E-05	3.30E-05	2.20E-05	1.90E-05	2.20E-05
50%	9.80E-05	5.30E-05	3.70E-05	3.30E-05	3.60E-05
75%	2.10E-04	8.70E-05	6.50E-05	5.50E-05	6.20E-05
90%	3.80E-04	1.50E-04	1.20E-04	9.70E-05	1.10E-04
95%	5.50E-04	2.20E-04	1.70E-04	1.40E-04	1.70E-04
99%	1.20E-03	4.70E-04	3.60E-04	3.10E-04	3.50E-04
99.9%	2.40E-03	1.00E-03	8.60E-04	5.70E-04	6.90E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 1.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Chariton Municipal Water Works, Chariton, Lucas County, Iowa					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	8.10E-06	5.40E-06	6.80E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.70E-06	1.20E-05
10%	8.00E-06	2.50E-05	1.50E-05	1.30E-05	1.50E-05
25%	4.00E-05	3.50E-05	2.30E-05	2.10E-05	2.30E-05
50%	1.10E-04	5.60E-05	3.90E-05	3.50E-05	3.80E-05
75%	2.20E-04	9.00E-05	6.80E-05	5.80E-05	6.40E-05
90%	3.90E-04	1.50E-04	1.20E-04	9.80E-05	1.10E-04
95%	5.30E-04	2.20E-04	1.70E-04	1.40E-04	1.70E-04
99%	1.20E-03	4.20E-04	3.30E-04	2.90E-04	3.10E-04
99.9%	2.10E-03	8.20E-04	6.60E-04	4.60E-04	5.00E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 1.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Chariton Municipal Water Works, Chariton, Lucas County, Iowa					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.60E-05	7.90E-06	5.30E-06	6.50E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.30E-06	1.10E-05
10%	8.00E-06	2.50E-05	1.50E-05	1.20E-05	1.40E-05
25%	3.90E-05	3.40E-05	2.20E-05	2.00E-05	2.20E-05
50%	1.00E-04	5.40E-05	3.80E-05	3.40E-05	3.70E-05
75%	2.20E-04	8.90E-05	6.60E-05	5.70E-05	6.40E-05
90%	3.80E-04	1.50E-04	1.20E-04	9.80E-05	1.10E-04
95%	5.40E-04	2.20E-04	1.70E-04	1.40E-04	1.60E-04
99%	1.30E-03	4.30E-04	3.50E-04	2.90E-04	3.20E-04
99.9%	2.00E-03	8.60E-04	7.40E-04	5.00E-04	6.00E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 1.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Chariton Municipal Water Works, Chariton, Lucas County, Iowa					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.10E-05
5%					1.90E-05
10%					2.40E-05
25%					3.50E-05
50%					5.10E-05
75%					7.10E-05
90%					9.70E-05
95%					1.20E-04
99%					1.50E-04
99.9%					1.70E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 2.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Sorento Water Treatment Plant, Sorento, Bond County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				4.00E-06	
5%				6.50E-06	
10%				8.50E-06	
25%				1.40E-05	
50%				2.80E-05	
75%				7.20E-05	
90%				1.40E-04	
95%				2.00E-04	
99%				3.40E-04	
99.9%				5.20E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 2.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Sorento Water Treatment Plant, Sorento, Bond County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.30E-05	6.30E-06	4.50E-06	5.20E-06
5%	8.00E-06	1.90E-05	1.00E-05	7.00E-06	7.90E-06
10%	8.00E-06	2.20E-05	1.30E-05	9.20E-06	1.00E-05
25%	3.20E-05	3.00E-05	1.90E-05	1.50E-05	1.70E-05
50%	8.70E-05	4.90E-05	3.50E-05	3.00E-05	3.40E-05
75%	2.30E-04	1.00E-04	7.60E-05	7.10E-05	7.90E-05
90%	5.40E-04	2.00E-04	1.60E-04	1.40E-04	1.50E-04
95%	7.90E-04	2.90E-04	2.30E-04	1.90E-04	2.10E-04
99%	1.30E-03	5.00E-04	4.30E-04	3.20E-04	3.60E-04
99.9%	2.00E-03	8.90E-04	7.70E-04	5.10E-04	7.00E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 2.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Sorento Water Treatment Plant, Sorento, Bond County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.30E-05	6.80E-06	4.70E-06	5.50E-06
5%	8.00E-06	2.00E-05	1.10E-05	7.80E-06	8.70E-06
10%	8.00E-06	2.30E-05	1.30E-05	1.00E-05	1.10E-05
25%	3.60E-05	3.20E-05	2.00E-05	1.70E-05	1.90E-05
50%	9.70E-05	5.40E-05	3.80E-05	3.40E-05	3.80E-05
75%	2.50E-04	1.10E-04	8.10E-05	7.20E-05	8.10E-05
90%	5.00E-04	1.90E-04	1.50E-04	1.30E-04	1.40E-04
95%	7.20E-04	2.60E-04	2.10E-04	1.70E-04	1.90E-04
99%	1.20E-03	4.50E-04	3.80E-04	2.80E-04	3.20E-04
99.9%	1.80E-03	8.20E-04	7.00E-04	4.40E-04	7.20E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 2.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Sorento Water Treatment Plant, Sorento, Bond County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.30E-05	6.90E-06	4.60E-06	5.60E-06
5%	8.00E-06	1.90E-05	1.10E-05	7.80E-06	8.80E-06
10%	8.00E-06	2.30E-05	1.30E-05	1.00E-05	1.10E-05
25%	3.40E-05	3.10E-05	2.00E-05	1.60E-05	1.80E-05
50%	9.10E-05	5.00E-05	3.50E-05	3.00E-05	3.40E-05
75%	2.30E-04	1.00E-04	7.60E-05	6.80E-05	7.70E-05
90%	5.10E-04	2.00E-04	1.50E-04	1.30E-04	1.50E-04
95%	7.70E-04	2.80E-04	2.20E-04	1.90E-04	2.00E-04
99%	1.30E-03	4.60E-04	4.00E-04	3.00E-04	3.40E-04
99.9%	1.80E-03	7.90E-04	7.30E-04	4.40E-04	6.60E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 2.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Sorento Water Treatment Plant, Sorento, Bond County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.20E-05
5%					2.10E-05
10%					2.60E-05
25%					3.90E-05
50%					5.80E-05
75%					8.10E-05
90%					1.10E-04
95%					1.30E-04
99%					1.70E-04
99.9%					1.90E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 3.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Flora Water Treatment Plant, Flora, Clay County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				4.00E-06	
5%				6.00E-06	
10%				7.40E-06	
25%				1.10E-05	
50%				1.90E-05	
75%				5.20E-05	
90%				1.20E-04	
95%				2.00E-04	
99%				5.40E-04	
99.9%				8.80E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 3.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Flora Water Treatment Plant, Flora, Clay County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.00E-06	4.10E-06	4.80E-06
5%	8.00E-06	1.80E-05	9.70E-06	6.30E-06	7.20E-06
10%	8.00E-06	2.00E-05	1.20E-05	7.90E-06	9.00E-06
25%	2.60E-05	2.60E-05	1.60E-05	1.20E-05	1.30E-05
50%	6.50E-05	3.90E-05	2.70E-05	2.20E-05	2.50E-05
75%	1.70E-04	8.10E-05	6.30E-05	5.50E-05	6.10E-05
90%	4.60E-04	1.90E-04	1.40E-04	1.30E-04	1.40E-04
95%	7.50E-04	3.00E-04	2.40E-04	2.10E-04	2.30E-04
99%	1.90E-03	6.50E-04	5.60E-04	4.30E-04	4.80E-04
99.9%	3.20E-03	1.20E-03	1.10E-03	6.90E-04	1.10E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 3.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Flora Water Treatment Plant, Flora, Clay County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.30E-05	6.40E-06	4.40E-06	5.10E-06
5%	8.00E-06	1.80E-05	1.00E-05	6.90E-06	8.00E-06
10%	8.00E-06	2.10E-05	1.20E-05	8.80E-06	1.00E-05
25%	2.90E-05	2.80E-05	1.70E-05	1.30E-05	1.50E-05
50%	7.50E-05	4.40E-05	3.00E-05	2.60E-05	2.90E-05
75%	2.00E-04	9.30E-05	7.00E-05	6.30E-05	6.90E-05
90%	5.00E-04	1.90E-04	1.50E-04	1.30E-04	1.40E-04
95%	7.60E-04	2.90E-04	2.30E-04	1.90E-04	2.10E-04
99%	1.60E-03	5.40E-04	4.60E-04	3.40E-04	4.00E-04
99.9%	2.10E-03	8.80E-04	8.50E-04	5.40E-04	8.10E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 3.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Flora Water Treatment Plant, Flora, Clay County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.40E-06	4.40E-06	5.10E-06
5%	8.00E-06	1.80E-05	1.00E-05	6.90E-06	7.90E-06
10%	8.00E-06	2.10E-05	1.20E-05	8.70E-06	9.80E-06
25%	2.90E-05	2.70E-05	1.70E-05	1.30E-05	1.50E-05
50%	7.30E-05	4.30E-05	3.00E-05	2.50E-05	2.80E-05
75%	1.90E-04	8.60E-05	6.50E-05	5.70E-05	6.30E-05
90%	4.70E-04	1.80E-04	1.40E-04	1.30E-04	1.40E-04
95%	7.60E-04	2.90E-04	2.30E-04	2.00E-04	2.20E-04
99%	1.60E-03	5.60E-04	4.60E-04	3.60E-04	4.00E-04
99.9%	2.10E-03	8.90E-04	8.00E-04	5.50E-04	7.60E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 3.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Flora Water Treatment Plant, Flora, Clay County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.10E-05
5%					2.00E-05
10%					2.50E-05
25%					3.70E-05
50%					5.40E-05
75%					7.60E-05
90%					1.00E-04
95%					1.30E-04
99%					1.60E-04
99.9%					1.80E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 4.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

W. Salem Water Treatment Plant, West Salem, Edwards County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.00E-06	
5%				8.70E-06	
10%				1.30E-05	
25%				2.40E-05	
50%				5.00E-05	
75%				1.00E-04	
90%				1.80E-04	
95%				2.50E-04	
99%				4.80E-04	
99.9%				7.50E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 4.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

W. Salem Water Treatment Plant, West Salem, Edwards County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	8.20E-06	3.10E-06	4.90E-06
5%	8.00E-06	2.20E-05	1.20E-05	9.90E-06	1.20E-05
10%	8.00E-06	2.80E-05	1.60E-05	1.40E-05	1.70E-05
25%	5.30E-05	4.30E-05	2.80E-05	2.70E-05	3.00E-05
50%	1.50E-04	7.80E-05	5.50E-05	5.30E-05	5.80E-05
75%	3.70E-04	1.40E-04	1.10E-04	1.00E-04	1.10E-04
90%	7.00E-04	2.60E-04	2.10E-04	1.70E-04	1.90E-04
95%	1.00E-03	3.70E-04	3.00E-04	2.40E-04	2.70E-04
99%	1.80E-03	6.70E-04	5.40E-04	4.30E-04	5.00E-04
99.9%	3.30E-03	1.20E-03	1.00E-03	7.70E-04	1.10E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 4.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

W. Salem Water Treatment Plant, West Salem, Edwards County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	6.70E-06	7.60E-06
5%	8.00E-06	2.40E-05	1.30E-05	1.20E-05	1.40E-05
10%	8.00E-06	3.00E-05	1.80E-05	1.70E-05	2.00E-05
25%	6.00E-05	4.70E-05	3.10E-05	3.10E-05	3.40E-05
50%	1.70E-04	8.10E-05	5.90E-05	5.60E-05	6.10E-05
75%	3.70E-04	1.40E-04	1.10E-04	9.90E-05	1.10E-04
90%	6.80E-04	2.50E-04	2.00E-04	1.60E-04	1.80E-04
95%	9.00E-04	3.50E-04	2.80E-04	2.20E-04	2.50E-04
99%	1.60E-03	6.10E-04	5.00E-04	3.90E-04	4.50E-04
99.9%	2.60E-03	1.20E-03	9.00E-04	6.20E-04	8.20E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 4.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

W. Salem Water Treatment Plant, West Salem, Edwards County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	6.50E-06	7.80E-06
5%	8.00E-06	2.40E-05	1.40E-05	1.30E-05	1.50E-05
10%	8.00E-06	3.00E-05	1.80E-05	1.70E-05	2.00E-05
25%	5.70E-05	4.50E-05	3.00E-05	2.90E-05	3.30E-05
50%	1.60E-04	7.90E-05	5.60E-05	5.20E-05	5.80E-05
75%	3.60E-04	1.40E-04	1.10E-04	9.80E-05	1.10E-04
90%	6.70E-04	2.50E-04	1.90E-04	1.70E-04	1.90E-04
95%	9.60E-04	3.40E-04	2.80E-04	2.20E-04	2.50E-04
99%	1.60E-03	5.90E-04	4.90E-04	3.50E-04	4.10E-04
99.9%	2.20E-03	9.70E-04	8.70E-04	5.20E-04	8.40E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 4.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

W. Salem Water Treatment Plant, West Salem, Edwards County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.50E-05
5%					2.80E-05
10%					3.60E-05
25%					5.50E-05
50%					8.20E-05
75%					1.10E-04
90%					1.60E-04
95%					1.90E-04
99%					2.50E-04
99.9%					2.80E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 5.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Farnia Water Treatment Plant, Farnia, Fayette County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				5.90E-06	
5%				1.60E-05	
10%				2.40E-05	
25%				4.10E-05	
50%				6.80E-05	
75%				1.10E-04	
90%				1.70E-04	
95%				2.40E-04	
99%				4.60E-04	
99.9%				9.10E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 5.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Farnia Water Treatment Plant, Farnia, Fayette County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	8.50E-06	9.10E-06
5%	8.00E-06	2.90E-05	1.80E-05	1.80E-05	2.20E-05
10%	8.00E-06	3.80E-05	2.40E-05	2.60E-05	3.00E-05
25%	7.60E-05	5.90E-05	4.20E-05	4.20E-05	4.60E-05
50%	2.20E-04	9.80E-05	7.30E-05	6.90E-05	7.40E-05
75%	4.40E-04	1.70E-04	1.30E-04	1.10E-04	1.20E-04
90%	7.30E-04	2.70E-04	2.10E-04	1.70E-04	1.90E-04
95%	9.60E-04	3.60E-04	2.90E-04	2.30E-04	2.60E-04
99%	1.80E-03	6.60E-04	5.60E-04	4.30E-04	5.00E-04
99.9%	3.10E-03	1.30E-03	1.20E-03	7.80E-04	1.00E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 5.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Farnia Water Treatment Plant, Farnia, Fayette County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	8.60E-06	9.70E-06
5%	8.00E-06	3.00E-05	1.80E-05	1.90E-05	2.20E-05
10%	8.00E-06	3.80E-05	2.50E-05	2.70E-05	3.00E-05
25%	7.80E-05	6.00E-05	4.20E-05	4.30E-05	4.70E-05
50%	2.30E-04	9.90E-05	7.40E-05	7.10E-05	7.60E-05
75%	4.40E-04	1.70E-04	1.30E-04	1.10E-04	1.20E-04
90%	7.30E-04	2.70E-04	2.20E-04	1.70E-04	1.90E-04
95%	9.60E-04	3.60E-04	2.90E-04	2.30E-04	2.60E-04
99%	1.80E-03	6.40E-04	5.30E-04	4.10E-04	4.60E-04
99.9%	2.80E-03	1.00E-03	9.60E-04	6.80E-04	8.90E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 5.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Farnia Water Treatment Plant, Farnia, Fayette County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	8.60E-06	9.50E-06
5%	8.00E-06	3.00E-05	1.80E-05	1.90E-05	2.20E-05
10%	8.00E-06	3.80E-05	2.50E-05	2.70E-05	3.00E-05
25%	7.60E-05	6.00E-05	4.20E-05	4.30E-05	4.70E-05
50%	2.30E-04	9.80E-05	7.40E-05	7.10E-05	7.60E-05
75%	4.40E-04	1.70E-04	1.30E-04	1.10E-04	1.20E-04
90%	7.30E-04	2.70E-04	2.10E-04	1.70E-04	1.90E-04
95%	9.80E-04	3.60E-04	2.90E-04	2.40E-04	2.60E-04
99%	1.80E-03	6.10E-04	5.00E-04	3.90E-04	4.40E-04
99.9%	2.50E-03	9.60E-04	8.90E-04	6.00E-04	9.50E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 5.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Farnia Water Treatment Plant, Farnia, Fayette County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.70E-05
5%					3.10E-05
10%					4.10E-05
25%					6.20E-05
50%					9.30E-05
75%					1.30E-04
90%					1.80E-04
95%					2.20E-04
99%					2.80E-04
99.9%					3.20E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 6.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

White Hall Water Treatment Plant, White Hall, Greene County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.60E-06	
5%				5.70E-06	
10%				7.00E-06	
25%				1.00E-05	
50%				2.00E-05	
75%				6.80E-05	
90%				2.00E-04	
95%				3.10E-04	
99%				5.80E-04	
99.9%				8.30E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 6.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

White Hall Water Treatment Plant, White Hall, Greene County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.20E-06	4.10E-06	4.60E-06
5%	8.00E-06	1.80E-05	9.60E-06	6.10E-06	6.70E-06
10%	8.00E-06	2.00E-05	1.10E-05	7.40E-06	8.30E-06
25%	2.50E-05	2.50E-05	1.50E-05	1.10E-05	1.30E-05
50%	6.40E-05	4.00E-05	2.70E-05	2.20E-05	2.60E-05
75%	2.00E-04	9.70E-05	7.20E-05	6.60E-05	7.30E-05
90%	7.10E-04	2.70E-04	2.10E-04	2.00E-04	2.20E-04
95%	1.20E-03	4.40E-04	3.30E-04	3.10E-04	3.40E-04
99%	2.50E-03	8.90E-04	7.00E-04	5.70E-04	6.40E-04
99.9%	3.50E-03	1.50E-03	1.20E-03	8.00E-04	1.30E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 6.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

White Hall Water Treatment Plant, White Hall, Greene County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.20E-06	4.10E-06	4.60E-06
5%	8.00E-06	1.80E-05	9.70E-06	6.10E-06	6.80E-06
10%	8.00E-06	2.00E-05	1.10E-05	7.60E-06	8.50E-06
25%	2.50E-05	2.60E-05	1.60E-05	1.10E-05	1.30E-05
50%	6.80E-05	4.20E-05	2.90E-05	2.30E-05	2.70E-05
75%	2.20E-04	1.00E-04	7.80E-05	7.40E-05	8.00E-05
90%	7.20E-04	2.70E-04	2.00E-04	2.00E-04	2.20E-04
95%	1.20E-03	4.30E-04	3.30E-04	3.00E-04	3.30E-04
99%	2.40E-03	8.00E-04	6.70E-04	5.30E-04	6.10E-04
99.9%	3.30E-03	1.50E-03	1.20E-03	7.70E-04	1.30E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 6.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

White Hall Water Treatment Plant, White Hall, Greene County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.30E-06	4.20E-06	4.70E-06
5%	8.00E-06	1.80E-05	9.70E-06	6.20E-06	6.90E-06
10%	8.00E-06	2.00E-05	1.10E-05	7.70E-06	8.60E-06
25%	2.60E-05	2.60E-05	1.60E-05	1.20E-05	1.30E-05
50%	7.00E-05	4.30E-05	3.00E-05	2.40E-05	2.80E-05
75%	2.20E-04	1.10E-04	8.00E-05	7.40E-05	8.20E-05
90%	7.50E-04	2.70E-04	2.10E-04	1.90E-04	2.10E-04
95%	1.20E-03	4.30E-04	3.30E-04	3.00E-04	3.30E-04
99%	2.40E-03	8.50E-04	6.80E-04	5.30E-04	6.20E-04
99.9%	3.30E-03	1.40E-03	1.20E-03	7.60E-04	1.30E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 6.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

White Hall Water Treatment Plant, White Hall, Greene County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.30E-05
5%					2.40E-05
10%					3.10E-05
25%					4.60E-05
50%					6.90E-05
75%					9.60E-05
90%					1.30E-04
95%					1.60E-04
99%					2.10E-04
99.9%					2.30E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 7.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Carlinville Water Works, Carlinville, Macoupin County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				5.40E-06	
5%				9.70E-06	
10%				1.30E-05	
25%				2.30E-05	
50%				4.60E-05	
75%				9.60E-05	
90%				1.90E-04	
95%				2.80E-04	
99%				5.00E-04	
99.9%				9.40E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 7.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Carlinville Water Works, Carlinville, Macoupin County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	6.00E-06	7.50E-06
5%	8.00E-06	2.30E-05	1.30E-05	1.10E-05	1.30E-05
10%	8.00E-06	2.80E-05	1.70E-05	1.60E-05	1.80E-05
25%	5.30E-05	4.30E-05	2.90E-05	2.60E-05	2.90E-05
50%	1.50E-04	7.40E-05	5.40E-05	4.90E-05	5.40E-05
75%	3.50E-04	1.40E-04	1.10E-04	1.00E-04	1.10E-04
90%	7.60E-04	2.80E-04	2.20E-04	1.90E-04	2.10E-04
95%	1.10E-03	4.00E-04	3.10E-04	2.70E-04	2.90E-04
99%	1.80E-03	7.00E-04	5.80E-04	4.40E-04	4.90E-04
99.9%	2.80E-03	1.20E-03	1.10E-03	6.60E-04	9.70E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 7.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Carlinville Water Works, Carlinville, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	6.40E-06	7.90E-06
5%	8.00E-06	2.40E-05	1.40E-05	1.30E-05	1.40E-05
10%	8.00E-06	2.90E-05	1.80E-05	1.70E-05	1.90E-05
25%	5.90E-05	4.50E-05	3.10E-05	2.80E-05	3.10E-05
50%	1.60E-04	7.80E-05	5.70E-05	5.30E-05	5.90E-05
75%	3.70E-04	1.50E-04	1.20E-04	1.10E-04	1.20E-04
90%	7.60E-04	2.70E-04	2.10E-04	1.90E-04	2.00E-04
95%	1.00E-03	3.70E-04	3.00E-04	2.40E-04	2.60E-04
99%	1.50E-03	6.00E-04	5.30E-04	3.60E-04	4.30E-04
99.9%	2.10E-03	9.20E-04	7.80E-04	5.10E-04	7.90E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 7.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Carlinville Water Works, Carlinville, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	6.20E-06	7.70E-06
5%	8.00E-06	2.30E-05	1.30E-05	1.20E-05	1.40E-05
10%	8.00E-06	2.80E-05	1.80E-05	1.60E-05	1.80E-05
25%	5.40E-05	4.40E-05	3.00E-05	2.70E-05	3.00E-05
50%	1.50E-04	7.40E-05	5.40E-05	5.00E-05	5.50E-05
75%	3.40E-04	1.40E-04	1.10E-04	9.60E-05	1.10E-04
90%	7.20E-04	2.60E-04	2.10E-04	1.80E-04	2.00E-04
95%	1.10E-03	3.70E-04	3.00E-04	2.50E-04	2.80E-04
99%	1.70E-03	6.50E-04	5.60E-04	3.90E-04	4.50E-04
99.9%	2.30E-03	1.00E-03	9.10E-04	5.60E-04	8.60E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 7.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Carlinville Water Works, Carlinville, Macoupin County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.50E-05
5%					2.90E-05
10%					3.70E-05
25%					5.60E-05
50%					8.30E-05
75%					1.20E-04
90%					1.60E-04
95%					2.00E-04
99%					2.50E-04
99.9%					2.80E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 8.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Gillespie Water Treatment Plant, Gillespie, Macoupin County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				5.10E-06	
5%				8.30E-06	
10%				1.10E-05	
25%				1.80E-05	
50%				3.50E-05	
75%				6.80E-05	
90%				1.30E-04	
95%				2.20E-04	
99%				9.80E-04	
99.9%				1.90E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 8.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Gillespie Water Treatment Plant, Gillespie, Macoupin County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.50E-05	7.60E-06	5.20E-06	6.00E-06
5%	8.00E-06	2.10E-05	1.20E-05	8.90E-06	9.90E-06
10%	8.00E-06	2.40E-05	1.40E-05	1.20E-05	1.30E-05
25%	4.00E-05	3.50E-05	2.30E-05	2.00E-05	2.20E-05
50%	1.10E-04	5.70E-05	4.10E-05	3.70E-05	4.10E-05
75%	2.50E-04	1.10E-04	8.10E-05	7.00E-05	7.80E-05
90%	5.10E-04	2.00E-04	1.60E-04	1.30E-04	1.50E-04
95%	8.30E-04	3.30E-04	2.60E-04	2.30E-04	2.60E-04
99%	3.40E-03	1.10E-03	9.50E-04	9.20E-04	9.20E-04
99.9%	8.20E-03	3.00E-03	2.40E-03	1.70E-03	2.20E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 8.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Gillespie Water Treatment Plant, Gillespie, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.60E-05	7.70E-06	5.50E-06	6.50E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.80E-06	1.10E-05
10%	8.00E-06	2.50E-05	1.50E-05	1.30E-05	1.50E-05
25%	4.40E-05	3.60E-05	2.40E-05	2.10E-05	2.40E-05
50%	1.20E-04	6.10E-05	4.40E-05	3.90E-05	4.30E-05
75%	2.70E-04	1.10E-04	8.60E-05	7.40E-05	8.20E-05
90%	5.40E-04	2.20E-04	1.70E-04	1.40E-04	1.60E-04
95%	9.20E-04	3.70E-04	2.80E-04	2.60E-04	2.80E-04
99%	2.90E-03	1.00E-03	8.20E-04	7.70E-04	8.20E-04
99.9%	5.80E-03	2.10E-03	1.80E-03	1.40E-03	1.60E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 8.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Gillespie Water Treatment Plant, Gillespie, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.40E-05	7.50E-06	5.30E-06	6.30E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.10E-06	1.00E-05
10%	8.00E-06	2.50E-05	1.50E-05	1.20E-05	1.30E-05
25%	4.10E-05	3.50E-05	2.30E-05	2.00E-05	2.20E-05
50%	1.10E-04	5.80E-05	4.10E-05	3.70E-05	4.10E-05
75%	2.50E-04	1.00E-04	7.90E-05	6.70E-05	7.40E-05
90%	4.80E-04	1.90E-04	1.50E-04	1.20E-04	1.40E-04
95%	8.30E-04	3.50E-04	2.70E-04	2.60E-04	3.20E-04
99%	3.40E-03	1.10E-03	9.30E-04	8.60E-04	8.70E-04
99.9%	6.00E-03	2.50E-03	2.00E-03	1.40E-03	1.60E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 8.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Gillespie Water Treatment Plant, Gillespie, Macoupin County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.50E-05
5%					2.70E-05
10%					3.50E-05
25%					5.30E-05
50%					7.90E-05
75%					1.10E-04
90%					1.50E-04
95%					1.90E-04
99%					2.40E-04
99.9%					2.70E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 9.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Hettick Water Supply, Hettick, Macoupin County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				5.10E-06	
5%				9.00E-06	
10%				1.50E-05	
25%				3.50E-05	
50%				8.60E-05	
75%				2.10E-04	
90%				4.10E-04	
95%				5.80E-04	
99%				1.00E-03	
99.9%				2.00E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 9.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Hettick Water Supply, Hettick, Macoupin County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	5.60E-06	6.30E-06
5%	8.00E-06	2.30E-05	1.40E-05	1.10E-05	1.20E-05
10%	8.00E-06	3.10E-05	2.00E-05	1.80E-05	2.00E-05
25%	7.40E-05	5.80E-05	4.00E-05	3.90E-05	4.30E-05
50%	2.60E-04	1.20E-04	9.30E-05	8.90E-05	1.00E-04
75%	7.10E-04	2.80E-04	2.20E-04	2.10E-04	2.30E-04
90%	1.60E-03	5.80E-04	4.50E-04	4.00E-04	4.40E-04
95%	2.30E-03	8.10E-04	6.60E-04	5.70E-04	6.10E-04
99%	4.10E-03	1.50E-03	1.30E-03	9.70E-04	1.10E-03
99.9%	7.20E-03	2.50E-03	2.40E-03	1.80E-03	2.50E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 9.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Hettick Water Supply, Hettick, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	6.00E-06	7.00E-06
5%	8.00E-06	2.40E-05	1.40E-05	1.20E-05	1.30E-05
10%	8.00E-06	3.20E-05	2.00E-05	1.80E-05	2.10E-05
25%	7.90E-05	6.20E-05	4.30E-05	4.30E-05	4.80E-05
50%	2.70E-04	1.30E-04	1.00E-04	1.00E-04	1.10E-04
75%	7.60E-04	3.00E-04	2.30E-04	2.10E-04	2.40E-04
90%	1.50E-03	5.50E-04	4.30E-04	3.80E-04	4.20E-04
95%	2.20E-03	7.60E-04	6.30E-04	5.20E-04	5.70E-04
99%	3.50E-03	1.30E-03	1.10E-03	8.30E-04	9.50E-04
99.9%	5.10E-03	2.10E-03	1.80E-03	1.20E-03	1.80E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 9.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Hettick Water Supply, Hettick, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	6.70E-06	7.70E-06
5%	8.00E-06	2.50E-05	1.50E-05	1.30E-05	1.50E-05
10%	8.00E-06	3.30E-05	2.10E-05	2.00E-05	2.20E-05
25%	7.90E-05	5.90E-05	4.10E-05	4.00E-05	4.50E-05
50%	2.60E-04	1.20E-04	9.10E-05	8.80E-05	9.60E-05
75%	6.60E-04	2.60E-04	2.10E-04	2.00E-04	2.10E-04
90%	1.50E-03	5.40E-04	4.30E-04	3.80E-04	4.20E-04
95%	2.20E-03	7.70E-04	6.30E-04	5.30E-04	5.80E-04
99%	3.90E-03	1.50E-03	1.20E-03	9.30E-04	1.10E-03
99.9%	6.20E-03	2.30E-03	2.10E-03	1.50E-03	2.00E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 9.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Hettick Water Supply, Hettick, Macoupin County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					2.60E-05
5%					5.30E-05
10%					7.00E-05
25%					1.10E-04
50%					1.70E-04
75%					2.30E-04
90%					3.20E-04
95%					3.90E-04
99%					5.10E-04
99.9%					5.70E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 10.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Shipman Water Treatment Plant, Shipman, Macoupin County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.70E-06	
5%				7.60E-06	
10%				1.10E-05	
25%				2.20E-05	
50%				4.70E-05	
75%				1.20E-04	
90%				3.60E-04	
95%				5.90E-04	
99%				1.20E-03	
99.9%				1.80E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 10.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Shipman Water Treatment Plant, Shipman, Macoupin County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.40E-05	7.80E-06	5.10E-06	5.50E-06
5%	8.00E-06	2.00E-05	1.20E-05	8.20E-06	9.20E-06
10%	8.00E-06	2.40E-05	1.50E-05	1.20E-05	1.40E-05
25%	4.30E-05	3.90E-05	2.60E-05	2.40E-05	2.70E-05
50%	1.50E-04	7.50E-05	5.40E-05	4.90E-05	5.50E-05
75%	4.10E-04	1.80E-04	1.40E-04	1.30E-04	1.40E-04
90%	1.20E-03	5.00E-04	3.80E-04	3.50E-04	3.80E-04
95%	2.30E-03	8.10E-04	6.50E-04	5.80E-04	6.40E-04
99%	5.10E-03	1.70E-03	1.40E-03	1.10E-03	1.30E-03
99.9%	7.10E-03	2.90E-03	2.70E-03	1.80E-03	2.40E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	99.99%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 10.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Shipman Water Treatment Plant, Shipman, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.60E-05	8.80E-06	5.70E-06	6.70E-06
5%	8.00E-06	2.20E-05	1.30E-05	9.90E-06	1.20E-05
10%	8.00E-06	2.70E-05	1.70E-05	1.40E-05	1.60E-05
25%	5.10E-05	4.20E-05	2.80E-05	2.70E-05	2.90E-05
50%	1.60E-04	7.60E-05	5.60E-05	5.00E-05	5.50E-05
75%	4.10E-04	1.80E-04	1.40E-04	1.30E-04	1.50E-04
90%	1.20E-03	4.70E-04	3.80E-04	3.40E-04	3.60E-04
95%	2.10E-03	7.60E-04	6.10E-04	5.30E-04	5.90E-04
99%	4.50E-03	1.50E-03	1.20E-03	1.00E-03	1.20E-03
99.9%	6.90E-03	2.90E-03	2.80E-03	1.50E-03	2.80E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	99.98%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 10.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Shipman Water Treatment Plant, Shipman, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.50E-05	8.50E-06	5.60E-06	6.40E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.30E-06	1.10E-05
10%	8.00E-06	2.60E-05	1.60E-05	1.30E-05	1.50E-05
25%	4.70E-05	4.00E-05	2.70E-05	2.50E-05	2.80E-05
50%	1.60E-04	7.60E-05	5.50E-05	5.00E-05	5.50E-05
75%	4.00E-04	1.70E-04	1.30E-04	1.20E-04	1.30E-04
90%	1.20E-03	4.50E-04	3.40E-04	3.20E-04	3.40E-04
95%	2.00E-03	7.40E-04	6.00E-04	5.40E-04	5.90E-04
99%	4.90E-03	1.60E-03	1.20E-03	1.10E-03	1.20E-03
99.9%	6.80E-03	2.90E-03	2.70E-03	1.80E-03	2.30E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	99.99%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 10.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Shipman Water Treatment Plant, Shipman, Macoupin County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					2.20E-05
5%					4.30E-05
10%					5.60E-05
25%					8.70E-05
50%					1.30E-04
75%					1.90E-04
90%					2.50E-04
95%					3.10E-04
99%					4.00E-04
99.9%					4.50E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 11.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Palmyra-Modesto Water Commission, N Palmyra Twp, Macoupin County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				5.10E-06	
5%				9.10E-06	
10%				1.50E-05	
25%				3.20E-05	
50%				6.10E-05	
75%				1.20E-04	
90%				2.40E-04	
95%				3.80E-04	
99%				6.80E-04	
99.9%				1.10E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 11.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Palmyra-Modesto Water Commission, N Palmyra Twp, Macoupin County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	6.90E-06	8.30E-06
5%	8.00E-06	2.60E-05	1.50E-05	1.40E-05	1.60E-05
10%	8.00E-06	3.20E-05	2.00E-05	2.00E-05	2.20E-05
25%	6.80E-05	5.10E-05	3.50E-05	3.40E-05	3.80E-05
50%	1.90E-04	9.00E-05	6.70E-05	6.20E-05	6.90E-05
75%	4.40E-04	1.70E-04	1.40E-04	1.20E-04	1.30E-04
90%	9.10E-04	3.50E-04	2.80E-04	2.50E-04	2.70E-04
95%	1.50E-03	5.50E-04	4.40E-04	3.70E-04	4.10E-04
99%	2.80E-03	1.00E-03	8.90E-04	6.60E-04	7.60E-04
99.9%	4.30E-03	1.80E-03	1.50E-03	1.10E-03	1.40E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 11.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Palmyra-Modesto Water Commission, N Palmyra Twp, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	7.10E-06	9.00E-06
5%	8.00E-06	2.70E-05	1.60E-05	1.50E-05	1.80E-05
10%	8.00E-06	3.40E-05	2.20E-05	2.20E-05	2.40E-05
25%	7.10E-05	5.30E-05	3.70E-05	3.70E-05	4.00E-05
50%	2.00E-04	9.30E-05	6.90E-05	6.40E-05	7.10E-05
75%	4.40E-04	1.70E-04	1.40E-04	1.20E-04	1.30E-04
90%	8.70E-04	3.40E-04	2.60E-04	2.30E-04	2.50E-04
95%	1.40E-03	5.10E-04	4.20E-04	3.50E-04	3.90E-04
99%	2.90E-03	9.90E-04	8.50E-04	6.00E-04	6.90E-04
99.9%	4.10E-03	1.70E-03	1.60E-03	9.70E-04	1.50E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 11.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Palmyra-Modesto Water Commission, N Palmyra Twp, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	7.10E-06	8.30E-06
5%	8.00E-06	2.60E-05	1.60E-05	1.60E-05	1.70E-05
10%	8.00E-06	3.30E-05	2.10E-05	2.10E-05	2.40E-05
25%	6.90E-05	5.20E-05	3.60E-05	3.50E-05	3.90E-05
50%	2.00E-04	9.00E-05	6.70E-05	6.20E-05	6.90E-05
75%	4.30E-04	1.70E-04	1.30E-04	1.20E-04	1.30E-04
90%	8.80E-04	3.30E-04	2.60E-04	2.40E-04	2.50E-04
95%	1.40E-03	4.90E-04	3.80E-04	3.30E-04	3.60E-04
99%	2.60E-03	9.90E-04	8.10E-04	5.70E-04	6.40E-04
99.9%	4.30E-03	1.80E-03	1.60E-03	9.60E-04	1.50E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 11.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Palmyra-Modesto Water Commission, N Palmyra Twp, Macoupin County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.90E-05
5%					3.60E-05
10%					4.70E-05
25%					7.20E-05
50%					1.10E-04
75%					1.50E-04
90%					2.10E-04
95%					2.60E-04
99%					3.30E-04
99.9%					3.70E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 12.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

ADGPTV Water Commission, North Otter Twp, Macoupin County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				7.50E-06	
5%				1.50E-05	
10%				2.20E-05	
25%				3.90E-05	
50%				6.90E-05	
75%				1.20E-04	
90%				2.00E-04	
95%				2.90E-04	
99%				5.20E-04	
99.9%				9.60E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 12.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

ADGPTV Water Commission, North Otter Twp, Macoupin County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	8.10E-06	9.50E-06
5%	8.00E-06	2.90E-05	1.70E-05	1.70E-05	2.00E-05
10%	8.00E-06	3.70E-05	2.40E-05	2.50E-05	2.80E-05
25%	7.90E-05	6.00E-05	4.20E-05	4.20E-05	4.60E-05
50%	2.30E-04	1.00E-04	7.60E-05	7.20E-05	7.80E-05
75%	4.60E-04	1.80E-04	1.40E-04	1.20E-04	1.30E-04
90%	8.00E-04	3.00E-04	2.40E-04	2.00E-04	2.20E-04
95%	1.10E-03	4.00E-04	3.40E-04	2.70E-04	3.10E-04
99%	2.00E-03	7.40E-04	6.20E-04	4.70E-04	5.50E-04
99.9%	3.50E-03	1.30E-03	1.00E-03	7.60E-04	1.10E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 12.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

ADGPTV Water Commission, North Otter Twp, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	8.30E-06	9.70E-06
5%	8.00E-06	2.90E-05	1.80E-05	1.80E-05	2.10E-05
10%	8.00E-06	3.80E-05	2.50E-05	2.60E-05	2.90E-05
25%	8.20E-05	6.10E-05	4.20E-05	4.30E-05	4.70E-05
50%	2.30E-04	1.00E-04	7.70E-05	7.30E-05	8.00E-05
75%	4.70E-04	1.80E-04	1.40E-04	1.20E-04	1.30E-04
90%	7.90E-04	2.90E-04	2.30E-04	2.00E-04	2.10E-04
95%	1.10E-03	3.90E-04	3.20E-04	2.50E-04	2.80E-04
99%	1.70E-03	6.30E-04	5.40E-04	3.80E-04	4.60E-04
99.9%	2.30E-03	9.60E-04	8.70E-04	5.40E-04	9.90E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 12.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

ADGPTV Water Commission, North Otter Twp, Macoupin County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	9.00E-06	8.10E-06	9.40E-06
5%	8.00E-06	2.80E-05	1.70E-05	1.70E-05	1.90E-05
10%	8.00E-06	3.60E-05	2.40E-05	2.40E-05	2.70E-05
25%	7.80E-05	5.80E-05	4.00E-05	4.10E-05	4.50E-05
50%	2.20E-04	1.00E-04	7.40E-05	7.10E-05	7.70E-05
75%	4.60E-04	1.70E-04	1.30E-04	1.20E-04	1.30E-04
90%	7.70E-04	2.90E-04	2.30E-04	1.90E-04	2.10E-04
95%	1.00E-03	3.90E-04	3.10E-04	2.60E-04	2.80E-04
99%	1.90E-03	6.80E-04	5.70E-04	4.10E-04	4.80E-04
99.9%	2.60E-03	1.10E-03	9.40E-04	6.50E-04	1.00E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 12.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

ADGPTV Water Commission, North Otter Twp, Macoupin County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.70E-05
5%					3.30E-05
10%					4.30E-05
25%					6.60E-05
50%					9.90E-05
75%					1.40E-04
90%					1.90E-04
95%					2.40E-04
99%					3.00E-04
99.9%					3.40E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 13.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Kinmundy Water Treatment Plant, Kinmundy, Marion County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.90E-06	
5%				5.50E-06	
10%				6.80E-06	
25%				1.10E-05	
50%				2.00E-05	
75%				4.40E-05	
90%				1.20E-04	
95%				1.90E-04	
99%				3.90E-04	
99.9%				7.50E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 13.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Kinmundy Water Treatment Plant, Kinmundy, Marion County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.10E-06	4.00E-06	4.50E-06
5%	8.00E-06	1.80E-05	9.70E-06	5.70E-06	6.30E-06
10%	8.00E-06	2.00E-05	1.10E-05	7.20E-06	8.00E-06
25%	2.30E-05	2.50E-05	1.60E-05	1.10E-05	1.30E-05
50%	6.40E-05	3.80E-05	2.60E-05	2.10E-05	2.40E-05
75%	1.50E-04	7.10E-05	5.40E-05	4.50E-05	5.10E-05
90%	4.10E-04	1.70E-04	1.30E-04	1.20E-04	1.30E-04
95%	7.30E-04	2.80E-04	2.20E-04	1.80E-04	2.00E-04
99%	1.60E-03	5.60E-04	4.50E-04	3.50E-04	4.20E-04
99.9%	2.70E-03	1.00E-03	9.00E-04	7.20E-04	9.20E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 13.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Kinmundy Water Treatment Plant, Kinmundy, Marion County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.40E-06	4.10E-06	4.70E-06
5%	8.00E-06	1.80E-05	1.00E-05	6.10E-06	6.90E-06
10%	8.00E-06	2.00E-05	1.20E-05	7.80E-06	9.00E-06
25%	2.60E-05	2.70E-05	1.70E-05	1.30E-05	1.50E-05
50%	7.00E-05	4.10E-05	2.80E-05	2.30E-05	2.60E-05
75%	1.60E-04	7.70E-05	5.80E-05	5.10E-05	5.70E-05
90%	4.10E-04	1.70E-04	1.30E-04	1.10E-04	1.20E-04
95%	6.90E-04	2.50E-04	2.10E-04	1.70E-04	1.90E-04
99%	1.40E-03	5.00E-04	4.20E-04	3.00E-04	3.90E-04
99.9%	2.30E-03	9.40E-04	8.50E-04	5.30E-04	8.50E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 13.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Kinmundy Water Treatment Plant, Kinmundy, Marion County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.40E-06	4.30E-06	4.90E-06
5%	8.00E-06	1.80E-05	1.00E-05	6.50E-06	7.30E-06
10%	8.00E-06	2.10E-05	1.20E-05	8.20E-06	9.20E-06
25%	2.70E-05	2.70E-05	1.70E-05	1.30E-05	1.50E-05
50%	7.00E-05	4.00E-05	2.80E-05	2.30E-05	2.60E-05
75%	1.60E-04	7.60E-05	5.70E-05	5.10E-05	5.60E-05
90%	4.30E-04	1.70E-04	1.30E-04	1.10E-04	1.20E-04
95%	6.80E-04	2.60E-04	2.10E-04	1.70E-04	1.80E-04
99%	1.50E-03	5.20E-04	4.20E-04	3.40E-04	3.70E-04
99.9%	2.50E-03	9.30E-04	8.30E-04	6.00E-04	8.10E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 13.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Kinmundy Water Treatment Plant, Kinmundy, Marion County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.10E-05
5%					1.80E-05
10%					2.30E-05
25%					3.30E-05
50%					4.90E-05
75%					6.80E-05
90%					9.20E-05
95%					1.10E-04
99%					1.40E-04
99.9%					1.60E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 14.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Salem, Marion County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.50E-06	
5%				5.30E-06	
10%				6.70E-06	
25%				1.10E-05	
50%				2.20E-05	
75%				5.30E-05	
90%				1.80E-04	
95%				4.40E-04	
99%				1.50E-03	
99.9%				3.00E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 14.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Salem, Marion County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.00E-06	4.00E-06	4.60E-06
5%	8.00E-06	1.80E-05	9.80E-06	6.00E-06	6.60E-06
10%	8.00E-06	2.00E-05	1.20E-05	7.50E-06	8.30E-06
25%	2.60E-05	2.60E-05	1.60E-05	1.20E-05	1.40E-05
50%	7.10E-05	4.30E-05	3.00E-05	2.50E-05	2.90E-05
75%	2.10E-04	9.20E-05	7.10E-05	6.10E-05	6.70E-05
90%	7.10E-04	3.10E-04	2.30E-04	2.30E-04	2.50E-04
95%	1.60E-03	6.40E-04	5.10E-04	4.50E-04	5.00E-04
99%	5.10E-03	1.90E-03	1.60E-03	1.30E-03	1.50E-03
99.9%	1.20E-02	4.50E-03	4.20E-03	2.70E-03	3.40E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	99.95%	99.98%	99.99%	100.00%	99.96%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 14.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Salem, Marion County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.30E-05	6.40E-06	4.30E-06	4.90E-06
5%	8.00E-06	1.80E-05	1.00E-05	6.40E-06	7.20E-06
10%	8.00E-06	2.10E-05	1.20E-05	8.30E-06	9.30E-06
25%	3.00E-05	2.80E-05	1.80E-05	1.40E-05	1.60E-05
50%	8.30E-05	4.80E-05	3.40E-05	2.90E-05	3.30E-05
75%	2.40E-04	1.10E-04	8.60E-05	7.40E-05	8.10E-05
90%	8.90E-04	3.70E-04	2.80E-04	2.70E-04	2.90E-04
95%	1.80E-03	6.50E-04	5.40E-04	5.00E-04	5.30E-04
99%	4.40E-03	1.50E-03	1.30E-03	9.60E-04	1.10E-03
99.9%	7.10E-03	2.80E-03	2.30E-03	1.70E-03	2.20E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	99.99%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 14.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Salem, Marion County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.30E-06	4.30E-06	4.80E-06
5%	8.00E-06	1.80E-05	1.00E-05	6.40E-06	7.10E-06
10%	8.00E-06	2.10E-05	1.20E-05	8.00E-06	9.10E-06
25%	2.80E-05	2.70E-05	1.70E-05	1.30E-05	1.50E-05
50%	7.40E-05	4.40E-05	3.10E-05	2.50E-05	2.90E-05
75%	2.20E-04	9.70E-05	7.30E-05	6.50E-05	7.20E-05
90%	6.80E-04	3.00E-04	2.30E-04	2.10E-04	2.30E-04
95%	1.70E-03	7.20E-04	5.40E-04	5.40E-04	5.80E-04
99%	5.20E-03	1.70E-03	1.40E-03	1.10E-03	1.20E-03
99.9%	7.20E-03	3.10E-03	2.70E-03	1.70E-03	2.40E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	99.99%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 14.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Salem, Marion County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.70E-05
5%					3.40E-05
10%					4.40E-05
25%					6.70E-05
50%					1.00E-04
75%					1.40E-04
90%					1.90E-04
95%					2.40E-04
99%					3.10E-04
99.9%					3.40E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 15.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Centralia Water Treatment Plant, Centralia, Marion County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				4.10E-06	
5%				5.90E-06	
10%				7.50E-06	
25%				1.40E-05	
50%				3.90E-05	
75%				9.30E-05	
90%				2.10E-04	
95%				3.30E-04	
99%				6.90E-04	
99.9%				1.20E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 15.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Centralia Water Treatment Plant, Centralia, Marion County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.40E-06	4.20E-06	4.80E-06
5%	8.00E-06	1.80E-05	1.00E-05	6.10E-06	6.80E-06
10%	8.00E-06	2.10E-05	1.20E-05	7.80E-06	8.90E-06
25%	3.20E-05	3.00E-05	1.90E-05	1.50E-05	1.80E-05
50%	1.10E-04	6.20E-05	4.50E-05	4.10E-05	4.60E-05
75%	3.30E-04	1.40E-04	1.10E-04	9.70E-05	1.10E-04
90%	8.00E-04	3.00E-04	2.30E-04	2.10E-04	2.30E-04
95%	1.30E-03	4.60E-04	3.70E-04	3.20E-04	3.50E-04
99%	2.50E-03	9.30E-04	7.50E-04	6.60E-04	7.30E-04
99.9%	4.80E-03	2.10E-03	1.80E-03	1.10E-03	1.60E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 15.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Centralia Water Treatment Plant, Centralia, Marion County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.40E-05	7.30E-06	4.70E-06	5.30E-06
5%	8.00E-06	2.00E-05	1.10E-05	7.40E-06	8.20E-06
10%	8.00E-06	2.30E-05	1.40E-05	1.00E-05	1.20E-05
25%	4.10E-05	3.70E-05	2.50E-05	2.20E-05	2.50E-05
50%	1.40E-04	7.20E-05	5.30E-05	4.90E-05	5.40E-05
75%	3.60E-04	1.50E-04	1.20E-04	1.00E-04	1.10E-04
90%	7.80E-04	2.80E-04	2.30E-04	2.00E-04	2.20E-04
95%	1.20E-03	4.20E-04	3.30E-04	2.80E-04	3.10E-04
99%	2.10E-03	7.80E-04	6.50E-04	4.90E-04	5.50E-04
99.9%	3.10E-03	1.40E-03	1.20E-03	7.50E-04	1.10E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 15.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Centralia Water Treatment Plant, Centralia, Marion County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.80E-06	4.40E-06	4.90E-06
5%	8.00E-06	1.90E-05	1.00E-05	6.40E-06	7.30E-06
10%	8.00E-06	2.20E-05	1.20E-05	8.40E-06	9.70E-06
25%	3.40E-05	3.10E-05	2.00E-05	1.60E-05	1.90E-05
50%	1.10E-04	6.40E-05	4.70E-05	4.30E-05	4.80E-05
75%	3.50E-04	1.40E-04	1.10E-04	1.00E-04	1.10E-04
90%	7.90E-04	3.00E-04	2.30E-04	2.10E-04	2.20E-04
95%	1.20E-03	4.30E-04	3.40E-04	2.90E-04	3.20E-04
99%	2.20E-03	7.80E-04	6.80E-04	4.80E-04	5.60E-04
99.9%	2.90E-03	1.30E-03	1.20E-03	7.00E-04	1.20E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 15.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Centralia Water Treatment Plant, Centralia, Marion County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.60E-05
5%					2.90E-05
10%					3.80E-05
25%					5.80E-05
50%					8.60E-05
75%					1.20E-04
90%					1.70E-04
95%					2.00E-04
99%					2.60E-04
99.9%					2.90E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 16.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Hillsboro Water Treatment Plant, Hillsboro, Montgomery County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				4.50E-06	
5%				6.90E-06	
10%				9.50E-06	
25%				2.10E-05	
50%				4.90E-05	
75%				9.40E-05	
90%				1.60E-04	
95%				2.20E-04	
99%				5.10E-04	
99.9%				1.10E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 16.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Hillsboro Water Treatment Plant, Hillsboro, Montgomery County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.40E-05	7.30E-06	4.70E-06	5.60E-06
5%	8.00E-06	2.00E-05	1.10E-05	7.90E-06	8.80E-06
10%	8.00E-06	2.40E-05	1.40E-05	1.10E-05	1.20E-05
25%	4.40E-05	3.80E-05	2.60E-05	2.30E-05	2.70E-05
50%	1.40E-04	7.40E-05	5.40E-05	5.20E-05	5.60E-05
75%	3.50E-04	1.40E-04	1.10E-04	9.60E-05	1.00E-04
90%	6.40E-04	2.40E-04	1.90E-04	1.50E-04	1.70E-04
95%	8.90E-04	3.30E-04	2.80E-04	2.20E-04	2.40E-04
99%	2.10E-03	6.90E-04	5.80E-04	5.10E-04	5.50E-04
99.9%	5.60E-03	1.60E-03	1.50E-03	1.10E-03	1.40E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	99.99%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 16.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Hillsboro Water Treatment Plant, Hillsboro, Montgomery County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.50E-05	7.80E-06	5.40E-06	6.10E-06
5%	8.00E-06	2.10E-05	1.20E-05	8.70E-06	9.80E-06
10%	8.00E-06	2.60E-05	1.50E-05	1.20E-05	1.40E-05
25%	4.90E-05	4.10E-05	2.70E-05	2.60E-05	2.90E-05
50%	1.50E-04	7.80E-05	5.60E-05	5.50E-05	6.00E-05
75%	3.70E-04	1.40E-04	1.10E-04	9.90E-05	1.10E-04
90%	6.60E-04	2.40E-04	1.90E-04	1.60E-04	1.70E-04
95%	8.70E-04	3.30E-04	2.70E-04	2.20E-04	2.40E-04
99%	1.70E-03	6.30E-04	5.10E-04	3.80E-04	4.60E-04
99.9%	3.10E-03	1.10E-03	1.00E-03	7.70E-04	9.00E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 16.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Hillsboro Water Treatment Plant, Hillsboro, Montgomery County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.60E-05	8.10E-06	5.40E-06	6.10E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.20E-06	1.10E-05
10%	8.00E-06	2.60E-05	1.60E-05	1.30E-05	1.50E-05
25%	4.90E-05	4.00E-05	2.70E-05	2.50E-05	2.80E-05
50%	1.40E-04	7.40E-05	5.40E-05	5.00E-05	5.60E-05
75%	3.50E-04	1.30E-04	1.10E-04	9.40E-05	1.00E-04
90%	6.60E-04	2.30E-04	1.90E-04	1.60E-04	1.70E-04
95%	8.80E-04	3.30E-04	2.70E-04	2.10E-04	2.30E-04
99%	1.60E-03	6.40E-04	5.20E-04	3.80E-04	4.50E-04
99.9%	3.00E-03	1.30E-03	1.10E-03	7.20E-04	9.90E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 16.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Hillsboro Water Treatment Plant, Hillsboro, Montgomery County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.40E-05
5%					2.70E-05
10%					3.40E-05
25%					5.20E-05
50%					7.80E-05
75%					1.10E-04
90%					1.50E-04
95%					1.80E-04
99%					2.40E-04
99.9%					2.60E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 17.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Wayne City Water Plant, Wayne City, Wayne County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				4.60E-06	
5%				7.40E-06	
10%				9.60E-06	
25%				1.50E-05	
50%				2.70E-05	
75%				5.30E-05	
90%				1.10E-04	
95%				1.90E-04	
99%				5.00E-04	
99.9%				1.40E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 17.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Wayne City Water Plant, Wayne City, Wayne County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.40E-05	7.20E-06	5.10E-06	6.00E-06
5%	8.00E-06	2.00E-05	1.10E-05	8.40E-06	9.70E-06
10%	8.00E-06	2.30E-05	1.40E-05	1.10E-05	1.30E-05
25%	3.50E-05	3.20E-05	2.00E-05	1.70E-05	1.90E-05
50%	9.10E-05	4.90E-05	3.40E-05	2.90E-05	3.20E-05
75%	2.00E-04	8.90E-05	6.80E-05	5.90E-05	6.50E-05
90%	4.70E-04	1.80E-04	1.40E-04	1.20E-04	1.40E-04
95%	7.50E-04	2.80E-04	2.20E-04	1.90E-04	2.10E-04
99%	1.60E-03	5.60E-04	4.60E-04	4.00E-04	4.50E-04
99.9%	4.20E-03	1.60E-03	1.10E-03	1.10E-03	1.10E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 17.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Wayne City Water Plant, Wayne City, Wayne County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.40E-05	7.60E-06	5.40E-06	6.30E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.00E-06	1.00E-05
10%	8.00E-06	2.40E-05	1.40E-05	1.20E-05	1.40E-05
25%	3.80E-05	3.40E-05	2.20E-05	1.80E-05	2.10E-05
50%	1.00E-04	5.30E-05	3.80E-05	3.30E-05	3.70E-05
75%	2.40E-04	1.00E-04	7.80E-05	7.10E-05	7.70E-05
90%	5.10E-04	1.90E-04	1.50E-04	1.30E-04	1.40E-04
95%	7.60E-04	2.70E-04	2.20E-04	1.80E-04	2.00E-04
99%	1.20E-03	4.70E-04	3.90E-04	2.90E-04	3.70E-04
99.9%	2.20E-03	9.20E-04	8.10E-04	5.20E-04	8.10E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 17.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Wayne City Water Plant, Wayne City, Wayne County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.40E-05	7.70E-06	5.20E-06	6.40E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.20E-06	1.10E-05
10%	8.00E-06	2.40E-05	1.40E-05	1.20E-05	1.40E-05
25%	3.70E-05	3.30E-05	2.10E-05	1.80E-05	2.00E-05
50%	9.90E-05	5.10E-05	3.60E-05	3.00E-05	3.40E-05
75%	2.20E-04	9.80E-05	7.40E-05	6.80E-05	7.50E-05
90%	5.30E-04	2.00E-04	1.50E-04	1.40E-04	1.50E-04
95%	7.90E-04	3.00E-04	2.40E-04	1.90E-04	2.10E-04
99%	1.50E-03	5.40E-04	4.50E-04	3.40E-04	4.00E-04
99.9%	2.60E-03	9.70E-04	8.70E-04	6.20E-04	7.50E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 17.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Wayne City Water Plant, Wayne City, Wayne County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.20E-05
5%					2.10E-05
10%					2.60E-05
25%					3.90E-05
50%					5.80E-05
75%					8.10E-05
90%					1.10E-04
95%					1.30E-04
99%					1.70E-04
99.9%					1.90E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 18.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Louisville Water Treatment Plant, Louisville, Clay County, Illinois					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.90E-06	
5%				6.10E-06	
10%				7.50E-06	
25%				1.10E-05	
50%				1.80E-05	
75%				6.00E-05	
90%				2.10E-04	
95%				3.30E-04	
99%				6.10E-04	
99.9%				1.00E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 18.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Louisville Water Treatment Plant, Louisville, Clay County, Illinois					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	5.90E-06	4.10E-06	4.80E-06
5%	8.00E-06	1.80E-05	9.80E-06	6.40E-06	7.10E-06
10%	8.00E-06	2.00E-05	1.20E-05	7.80E-06	8.70E-06
25%	2.60E-05	2.50E-05	1.60E-05	1.20E-05	1.30E-05
50%	6.70E-05	4.00E-05	2.70E-05	2.20E-05	2.50E-05
75%	2.00E-04	1.00E-04	7.60E-05	7.30E-05	8.00E-05
90%	7.30E-04	2.80E-04	2.20E-04	2.00E-04	2.20E-04
95%	1.20E-03	4.50E-04	3.60E-04	3.10E-04	3.40E-04
99%	2.60E-03	8.80E-04	7.50E-04	5.60E-04	6.40E-04
99.9%	3.90E-03	1.70E-03	1.60E-03	9.10E-04	1.30E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 18.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Louisville Water Treatment Plant, Louisville, Clay County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.10E-06	4.20E-06	4.90E-06
5%	8.00E-06	1.80E-05	1.00E-05	6.90E-06	7.70E-06
10%	8.00E-06	2.10E-05	1.20E-05	8.70E-06	9.50E-06
25%	3.00E-05	2.70E-05	1.70E-05	1.30E-05	1.50E-05
50%	7.60E-05	4.60E-05	3.30E-05	2.70E-05	3.20E-05
75%	2.80E-04	1.20E-04	9.30E-05	8.90E-05	9.90E-05
90%	7.10E-04	2.60E-04	2.10E-04	1.80E-04	2.00E-04
95%	1.10E-03	3.90E-04	3.20E-04	2.70E-04	2.90E-04
99%	2.10E-03	7.40E-04	6.30E-04	4.80E-04	5.20E-04
99.9%	3.00E-03	1.30E-03	1.20E-03	7.10E-04	1.00E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 18.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Louisville Water Treatment Plant, Louisville, Clay County, Illinois					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.20E-06	4.40E-06	5.00E-06
5%	8.00E-06	1.80E-05	1.00E-05	7.00E-06	7.80E-06
10%	8.00E-06	2.10E-05	1.20E-05	8.70E-06	9.80E-06
25%	2.80E-05	2.70E-05	1.70E-05	1.30E-05	1.50E-05
50%	7.60E-05	4.30E-05	3.00E-05	2.40E-05	2.80E-05
75%	1.90E-04	8.70E-05	6.60E-05	5.50E-05	6.40E-05
90%	7.20E-04	2.70E-04	2.10E-04	2.00E-04	2.20E-04
95%	1.20E-03	4.20E-04	3.20E-04	3.00E-04	3.10E-04
99%	2.10E-03	7.80E-04	6.30E-04	5.00E-04	5.30E-04
99.9%	3.20E-03	1.30E-03	1.20E-03	7.50E-04	1.00E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 18.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Louisville Water Treatment Plant, Louisville, Clay County, Illinois					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.40E-05
5%					2.50E-05
10%					3.30E-05
25%					4.90E-05
50%					7.30E-05
75%					1.00E-04
90%					1.40E-04
95%					1.70E-04
99%					2.20E-04
99.9%					2.50E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 19.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Holland Water Department, Holland, Dubois County, Indiana					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.80E-06	
5%				5.20E-06	
10%				6.40E-06	
25%				9.20E-06	
50%				1.60E-05	
75%				4.50E-05	
90%				1.30E-04	
95%				2.60E-04	
99%				5.40E-04	
99.9%				8.70E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 19.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Holland Water Department, Holland, Dubois County, Indiana					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	5.40E-06	3.80E-06	4.10E-06
5%	8.00E-06	1.70E-05	9.20E-06	5.50E-06	6.00E-06
10%	8.00E-06	1.90E-05	1.10E-05	6.70E-06	7.40E-06
25%	2.10E-05	2.30E-05	1.40E-05	9.50E-06	1.10E-05
50%	5.00E-05	3.30E-05	2.20E-05	1.60E-05	2.00E-05
75%	1.40E-04	6.90E-05	5.10E-05	4.40E-05	5.00E-05
90%	4.70E-04	1.80E-04	1.40E-04	1.30E-04	1.50E-04
95%	9.60E-04	3.40E-04	2.70E-04	2.60E-04	2.80E-04
99%	2.30E-03	8.00E-04	6.50E-04	5.10E-04	5.60E-04
99.9%	3.70E-03	1.60E-03	1.30E-03	8.30E-04	1.10E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 19.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Holland Water Department, Holland, Dubois County, Indiana					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	5.50E-06	3.90E-06	4.20E-06
5%	8.00E-06	1.70E-05	9.30E-06	5.50E-06	6.10E-06
10%	8.00E-06	1.90E-05	1.10E-05	6.80E-06	7.50E-06
25%	2.10E-05	2.40E-05	1.40E-05	1.00E-05	1.10E-05
50%	5.20E-05	3.40E-05	2.20E-05	1.70E-05	2.00E-05
75%	1.40E-04	7.00E-05	5.20E-05	4.70E-05	5.20E-05
90%	4.80E-04	1.90E-04	1.40E-04	1.20E-04	1.40E-04
95%	8.60E-04	3.20E-04	2.60E-04	2.40E-04	2.70E-04
99%	2.30E-03	7.80E-04	6.30E-04	4.90E-04	5.40E-04
99.9%	3.60E-03	1.50E-03	1.20E-03	8.30E-04	1.00E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 19.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Holland Water Department, Holland, Dubois County, Indiana					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	5.50E-06	3.90E-06	4.20E-06
5%	8.00E-06	1.70E-05	9.20E-06	5.50E-06	6.00E-06
10%	8.00E-06	1.90E-05	1.10E-05	6.70E-06	7.40E-06
25%	2.10E-05	2.30E-05	1.40E-05	9.60E-06	1.10E-05
50%	5.00E-05	3.40E-05	2.20E-05	1.70E-05	2.00E-05
75%	1.40E-04	6.80E-05	5.00E-05	4.30E-05	4.90E-05
90%	4.50E-04	1.80E-04	1.40E-04	1.30E-04	1.50E-04
95%	9.50E-04	3.40E-04	2.70E-04	2.50E-04	2.70E-04
99%	2.20E-03	7.20E-04	6.00E-04	4.80E-04	5.00E-04
99.9%	2.90E-03	1.30E-03	1.20E-03	7.40E-04	9.50E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 19.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Holland Water Department, Holland, Dubois County, Indiana					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.10E-05
5%					2.00E-05
10%					2.50E-05
25%					3.70E-05
50%					5.50E-05
75%					7.70E-05
90%					1.00E-04
95%					1.30E-04
99%					1.60E-04
99.9%					1.80E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 20.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

North Vernon Water Department, North Vernon, Jennings County, Indiana					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.60E-06	
5%				4.70E-06	
10%				5.60E-06	
25%				7.60E-06	
50%				1.10E-05	
75%				3.20E-05	
90%				1.10E-04	
95%				1.70E-04	
99%				5.10E-04	
99.9%				1.10E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 20.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

North Vernon Water Department, North Vernon, Jennings County, Indiana					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	4.80E-06	3.60E-06	3.90E-06
5%	8.00E-06	1.60E-05	8.70E-06	4.90E-06	5.40E-06
10%	8.00E-06	1.80E-05	1.00E-05	5.80E-06	6.40E-06
25%	1.80E-05	2.20E-05	1.30E-05	8.00E-06	8.80E-06
50%	3.90E-05	2.80E-05	1.80E-05	1.20E-05	1.50E-05
75%	1.00E-04	6.00E-05	4.30E-05	4.00E-05	4.40E-05
90%	4.00E-04	1.60E-04	1.20E-04	1.20E-04	1.20E-04
95%	7.40E-04	2.70E-04	2.10E-04	1.80E-04	2.00E-04
99%	1.90E-03	6.60E-04	5.50E-04	4.60E-04	5.30E-04
99.9%	3.70E-03	1.60E-03	1.30E-03	8.10E-04	1.00E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 20.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

North Vernon Water Department, North Vernon, Jennings County, Indiana					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	5.10E-06	3.80E-06	4.00E-06
5%	8.00E-06	1.70E-05	9.00E-06	5.10E-06	5.70E-06
10%	8.00E-06	1.90E-05	1.00E-05	6.20E-06	6.80E-06
25%	1.90E-05	2.20E-05	1.30E-05	8.60E-06	9.60E-06
50%	4.50E-05	3.00E-05	2.00E-05	1.40E-05	1.70E-05
75%	1.20E-04	7.40E-05	5.30E-05	5.30E-05	5.70E-05
90%	4.90E-04	1.90E-04	1.40E-04	1.30E-04	1.40E-04
95%	7.70E-04	2.80E-04	2.30E-04	1.90E-04	2.10E-04
99%	1.40E-03	5.40E-04	4.60E-04	3.30E-04	3.70E-04
99.9%	2.10E-03	8.70E-04	8.10E-04	5.30E-04	7.30E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 20.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

North Vernon Water Department, North Vernon, Jennings County, Indiana					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	5.00E-06	3.70E-06	3.90E-06
5%	8.00E-06	1.70E-05	9.00E-06	5.00E-06	5.50E-06
10%	8.00E-06	1.90E-05	1.00E-05	6.00E-06	6.60E-06
25%	1.90E-05	2.20E-05	1.30E-05	8.50E-06	9.60E-06
50%	4.40E-05	3.10E-05	2.00E-05	1.50E-05	1.80E-05
75%	1.30E-04	6.70E-05	4.80E-05	4.50E-05	4.90E-05
90%	3.80E-04	1.60E-04	1.20E-04	1.10E-04	1.20E-04
95%	7.00E-04	2.60E-04	2.00E-04	1.80E-04	2.00E-04
99%	1.60E-03	6.00E-04	4.80E-04	3.90E-04	4.30E-04
99.9%	2.70E-03	1.00E-03	8.50E-04	6.80E-04	8.20E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 20.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

North Vernon Water Department, North Vernon, Jennings County, Indiana					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.00E-05
5%					1.70E-05
10%					2.20E-05
25%					3.20E-05
50%					4.70E-05
75%					6.50E-05
90%					8.80E-05
95%					1.10E-04
99%					1.40E-04
99.9%					1.50E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 21.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Batesville Water Utility, Batesville, Ripley County, Indiana					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.60E-06	
5%				5.60E-06	
10%				7.40E-06	
25%				1.40E-05	
50%				3.60E-05	
75%				8.50E-05	
90%				1.70E-04	
95%				2.50E-04	
99%				4.80E-04	
99.9%				8.00E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 21.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Batesville Water Utility, Batesville, Ripley County, Indiana					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.40E-06	4.10E-06	4.60E-06
5%	8.00E-06	1.80E-05	1.00E-05	6.00E-06	6.80E-06
10%	8.00E-06	2.10E-05	1.20E-05	7.90E-06	8.80E-06
25%	3.00E-05	3.00E-05	1.90E-05	1.50E-05	1.70E-05
50%	9.60E-05	5.70E-05	4.00E-05	3.80E-05	4.20E-05
75%	2.90E-04	1.20E-04	9.10E-05	8.40E-05	9.20E-05
90%	6.40E-04	2.40E-04	1.90E-04	1.60E-04	1.70E-04
95%	9.60E-04	3.60E-04	2.80E-04	2.40E-04	2.60E-04
99%	2.10E-03	7.00E-04	5.70E-04	4.70E-04	5.20E-04
99.9%	3.20E-03	1.30E-03	1.10E-03	7.70E-04	9.00E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 21.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Batesville Water Utility, Batesville, Ripley County, Indiana					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.50E-06	4.10E-06	4.70E-06
5%	8.00E-06	1.80E-05	1.00E-05	6.30E-06	6.90E-06
10%	8.00E-06	2.10E-05	1.20E-05	8.20E-06	9.20E-06
25%	3.10E-05	3.00E-05	1.90E-05	1.60E-05	1.80E-05
50%	9.90E-05	5.80E-05	4.10E-05	3.80E-05	4.30E-05
75%	2.90E-04	1.20E-04	9.20E-05	8.40E-05	9.10E-05
90%	6.10E-04	2.30E-04	1.80E-04	1.60E-04	1.70E-04
95%	9.40E-04	3.40E-04	2.70E-04	2.30E-04	2.60E-04
99%	2.00E-03	7.20E-04	5.60E-04	4.70E-04	5.10E-04
99.9%	3.30E-03	1.20E-03	1.00E-03	7.80E-04	9.00E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 21.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Batesville Water Utility, Batesville, Ripley County, Indiana					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	6.60E-06	4.30E-06	4.80E-06
5%	8.00E-06	1.90E-05	1.00E-05	6.50E-06	7.30E-06
10%	8.00E-06	2.20E-05	1.30E-05	8.60E-06	9.90E-06
25%	3.40E-05	3.20E-05	2.10E-05	1.70E-05	2.00E-05
50%	1.10E-04	6.10E-05	4.40E-05	4.20E-05	4.50E-05
75%	3.10E-04	1.20E-04	9.40E-05	8.60E-05	9.20E-05
90%	6.00E-04	2.30E-04	1.80E-04	1.50E-04	1.70E-04
95%	8.80E-04	3.20E-04	2.60E-04	2.20E-04	2.50E-04
99%	1.80E-03	6.10E-04	5.00E-04	4.30E-04	4.70E-04
99.9%	2.90E-03	1.20E-03	9.80E-04	7.40E-04	8.20E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 21.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Batesville Water Utility, Batesville, Ripley County, Indiana					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.40E-05
5%					2.50E-05
10%					3.20E-05
25%					4.70E-05
50%					7.00E-05
75%					9.90E-05
90%					1.40E-04
95%					1.60E-04
99%					2.10E-04
99.9%					2.40E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 22.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Scottsburg Water Treatment Plant, Scottsburg, Scott County, Indiana					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.80E-06	
5%				4.90E-06	
10%				5.90E-06	
25%				8.20E-06	
50%				1.60E-05	
75%				4.40E-05	
90%				1.30E-04	
95%				2.50E-04	
99%				5.50E-04	
99.9%				8.90E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 22.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Scottsburg Water Treatment Plant, Scottsburg, Scott County, Indiana					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	4.80E-06	3.90E-06	4.10E-06
5%	8.00E-06	1.70E-05	9.00E-06	5.10E-06	5.60E-06
10%	8.00E-06	1.90E-05	1.00E-05	6.10E-06	6.70E-06
25%	2.00E-05	2.30E-05	1.30E-05	8.70E-06	1.00E-05
50%	4.70E-05	3.40E-05	2.20E-05	1.70E-05	2.10E-05
75%	1.40E-04	6.90E-05	5.00E-05	4.30E-05	4.80E-05
90%	4.10E-04	1.70E-04	1.40E-04	1.30E-04	1.40E-04
95%	8.70E-04	3.20E-04	2.60E-04	2.40E-04	2.60E-04
99%	2.50E-03	8.40E-04	6.80E-04	5.40E-04	6.00E-04
99.9%	4.00E-03	1.60E-03	1.40E-03	8.70E-04	1.50E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 22.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Scottsburg Water Treatment Plant, Scottsburg, Scott County, Indiana					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	5.10E-06	4.00E-06	4.30E-06
5%	8.00E-06	1.70E-05	9.20E-06	5.40E-06	5.90E-06
10%	8.00E-06	1.90E-05	1.10E-05	6.60E-06	7.20E-06
25%	2.10E-05	2.40E-05	1.40E-05	9.60E-06	1.10E-05
50%	5.30E-05	3.60E-05	2.40E-05	2.00E-05	2.30E-05
75%	1.60E-04	7.30E-05	5.30E-05	4.70E-05	5.20E-05
90%	4.10E-04	1.70E-04	1.30E-04	1.20E-04	1.30E-04
95%	7.80E-04	2.90E-04	2.30E-04	2.00E-04	2.20E-04
99%	2.10E-03	7.10E-04	5.90E-04	4.90E-04	5.50E-04
99.9%	3.90E-03	1.60E-03	1.30E-03	8.70E-04	1.10E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 22.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Scottsburg Water Treatment Plant, Scottsburg, Scott County, Indiana					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	5.10E-06	4.00E-06	4.20E-06
5%	8.00E-06	1.70E-05	9.20E-06	5.50E-06	5.90E-06
10%	8.00E-06	1.90E-05	1.10E-05	6.60E-06	7.30E-06
25%	2.10E-05	2.40E-05	1.40E-05	9.60E-06	1.10E-05
50%	5.20E-05	3.50E-05	2.30E-05	1.80E-05	2.10E-05
75%	1.40E-04	6.80E-05	5.00E-05	4.30E-05	4.90E-05
90%	4.20E-04	1.80E-04	1.30E-04	1.30E-04	1.40E-04
95%	8.40E-04	3.00E-04	2.40E-04	2.30E-04	2.40E-04
99%	2.00E-03	7.30E-04	5.70E-04	4.50E-04	5.20E-04
99.9%	3.10E-03	1.30E-03	1.20E-03	7.30E-04	1.10E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 22.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Scottsburg Water Treatment Plant, Scottsburg, Scott County, Indiana					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.10E-05
5%					1.90E-05
10%					2.50E-05
25%					3.60E-05
50%					5.30E-05
75%					7.50E-05
90%					1.00E-04
95%					1.20E-04
99%					1.60E-04
99.9%					1.80E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 23.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Iberville Water District #3, White Castle, Iberville County, Louisiana					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				4.40E-06	
5%				6.50E-06	
10%				8.40E-06	
25%				1.40E-05	
50%				2.60E-05	
75%				5.60E-05	
90%				1.30E-04	
95%				2.30E-04	
99%				6.30E-04	
99.9%				1.40E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 23.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Iberville Water District #3, White Castle, Iberville County, Louisiana					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.30E-05	6.80E-06	4.70E-06	5.10E-06
5%	8.00E-06	1.90E-05	1.10E-05	7.60E-06	8.50E-06
10%	8.00E-06	2.30E-05	1.30E-05	1.00E-05	1.10E-05
25%	3.30E-05	3.10E-05	2.00E-05	1.60E-05	1.90E-05
50%	9.20E-05	5.00E-05	3.60E-05	3.00E-05	3.40E-05
75%	2.20E-04	9.80E-05	7.50E-05	6.50E-05	7.30E-05
90%	5.30E-04	2.10E-04	1.60E-04	1.40E-04	1.60E-04
95%	9.10E-04	3.40E-04	2.80E-04	2.40E-04	2.70E-04
99%	2.40E-03	8.50E-04	7.10E-04	5.60E-04	6.10E-04
99.9%	4.20E-03	1.80E-03	1.40E-03	9.80E-04	1.40E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 23.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Iberville Water District #3, White Castle, Iberville County, Louisiana					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.60E-05	8.40E-06	5.90E-06	6.60E-06
5%	8.00E-06	2.20E-05	1.20E-05	1.00E-05	1.10E-05
10%	8.00E-06	2.60E-05	1.60E-05	1.40E-05	1.60E-05
25%	4.40E-05	3.80E-05	2.50E-05	2.30E-05	2.50E-05
50%	1.20E-04	6.20E-05	4.50E-05	4.00E-05	4.40E-05
75%	2.70E-04	1.10E-04	8.60E-05	7.50E-05	8.30E-05
90%	5.60E-04	2.20E-04	1.70E-04	1.50E-04	1.70E-04
95%	8.80E-04	3.20E-04	2.60E-04	2.10E-04	2.40E-04
99%	1.60E-03	5.90E-04	4.90E-04	3.40E-04	4.20E-04
99.9%	2.00E-03	8.80E-04	8.10E-04	4.90E-04	8.60E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 23.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Iberville Water District #3, White Castle, Iberville County, Louisiana					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.40E-05	7.60E-06	5.20E-06	5.80E-06
5%	8.00E-06	2.00E-05	1.20E-05	8.70E-06	9.70E-06
10%	8.00E-06	2.40E-05	1.40E-05	1.10E-05	1.30E-05
25%	3.80E-05	3.40E-05	2.20E-05	1.90E-05	2.10E-05
50%	1.10E-04	5.70E-05	4.10E-05	3.50E-05	4.00E-05
75%	2.50E-04	1.10E-04	8.20E-05	7.40E-05	8.10E-05
90%	6.00E-04	2.10E-04	1.70E-04	1.50E-04	1.60E-04
95%	9.00E-04	3.40E-04	2.60E-04	2.20E-04	2.50E-04
99%	1.80E-03	6.80E-04	5.50E-04	4.20E-04	4.80E-04
99.9%	2.80E-03	1.20E-03	1.10E-03	6.30E-04	9.70E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 23.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Iberville Water District #3, White Castle, Iberville County, Louisiana					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.30E-05
5%					2.30E-05
10%					3.00E-05
25%					4.40E-05
50%					6.60E-05
75%					9.20E-05
90%					1.30E-04
95%					1.50E-04
99%					2.00E-04
99.9%					2.20E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 24.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Higginsville Water Treatment Plant, Higginsville, Lafayette County, Missouri					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				4.90E-06	
5%				8.40E-06	
10%				1.20E-05	
25%				2.20E-05	
50%				4.10E-05	
75%				7.40E-05	
90%				1.30E-04	
95%				2.30E-04	
99%				5.50E-04	
99.9%				1.00E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 24.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Higginsville Water Treatment Plant, Higginsville, Lafayette County, Missouri					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.60E-05	8.10E-06	5.40E-06	6.00E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.10E-06	1.10E-05
10%	8.00E-06	2.60E-05	1.60E-05	1.30E-05	1.50E-05
25%	4.50E-05	3.80E-05	2.50E-05	2.40E-05	2.60E-05
50%	1.30E-04	6.40E-05	4.60E-05	4.20E-05	4.60E-05
75%	2.70E-04	1.10E-04	8.50E-05	7.30E-05	8.00E-05
90%	5.00E-04	2.00E-04	1.60E-04	1.30E-04	1.40E-04
95%	7.90E-04	3.20E-04	2.60E-04	2.30E-04	2.50E-04
99%	2.30E-03	8.40E-04	6.90E-04	5.40E-04	6.50E-04
99.9%	4.30E-03	1.80E-03	1.60E-03	1.00E-03	1.60E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 24.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Higginsville Water Treatment Plant, Higginsville, Lafayette County, Missouri					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.60E-05	8.20E-06	5.40E-06	6.10E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.60E-06	1.10E-05
10%	8.00E-06	2.60E-05	1.60E-05	1.40E-05	1.50E-05
25%	4.60E-05	3.90E-05	2.60E-05	2.40E-05	2.70E-05
50%	1.30E-04	6.60E-05	4.70E-05	4.40E-05	4.80E-05
75%	2.80E-04	1.10E-04	8.80E-05	7.60E-05	8.30E-05
90%	5.10E-04	2.00E-04	1.60E-04	1.30E-04	1.50E-04
95%	8.30E-04	3.20E-04	2.60E-04	2.30E-04	2.50E-04
99%	2.40E-03	7.50E-04	6.00E-04	4.80E-04	5.30E-04
99.9%	3.20E-03	1.30E-03	1.20E-03	7.80E-04	1.20E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 24.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Higginsville Water Treatment Plant, Higginsville, Lafayette County, Missouri					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.60E-05	8.30E-06	5.50E-06	6.00E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.10E-06	1.10E-05
10%	8.00E-06	2.60E-05	1.50E-05	1.30E-05	1.40E-05
25%	4.30E-05	3.70E-05	2.40E-05	2.20E-05	2.50E-05
50%	1.20E-04	6.20E-05	4.50E-05	4.10E-05	4.50E-05
75%	2.70E-04	1.10E-04	8.20E-05	7.00E-05	7.70E-05
90%	4.80E-04	1.90E-04	1.50E-04	1.20E-04	1.40E-04
95%	7.80E-04	3.00E-04	2.40E-04	2.10E-04	2.50E-04
99%	2.60E-03	8.50E-04	6.70E-04	5.70E-04	5.90E-04
99.9%	4.30E-03	1.60E-03	1.40E-03	9.40E-04	1.20E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 24.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Higginsville Water Treatment Plant, Higginsville, Lafayette County, Missouri					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.40E-05
5%					2.50E-05
10%					3.20E-05
25%					4.80E-05
50%					7.10E-05
75%					1.00E-04
90%					1.40E-04
95%					1.70E-04
99%					2.10E-04
99.9%					2.40E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 25.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Bucklin Water Department, Linn County, Missouri					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.60E-06	
5%				4.80E-06	
10%				5.70E-06	
25%				7.70E-06	
50%				1.20E-05	
75%				2.00E-05	
90%				9.40E-05	
95%				2.10E-04	
99%				4.50E-04	
99.9%				7.30E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 25.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Bucklin Water Department, Linn County, Missouri					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.00E-05	4.90E-06	3.70E-06	4.00E-06
5%	8.00E-06	1.40E-05	8.40E-06	4.90E-06	5.40E-06
10%	8.00E-06	1.80E-05	1.00E-05	5.80E-06	6.50E-06
25%	1.70E-05	2.10E-05	1.20E-05	7.90E-06	9.00E-06
50%	3.70E-05	2.70E-05	1.70E-05	1.20E-05	1.40E-05
75%	7.50E-05	4.00E-05	2.90E-05	2.10E-05	2.50E-05
90%	2.60E-04	1.30E-04	9.80E-05	9.80E-05	1.10E-04
95%	7.40E-04	2.90E-04	2.30E-04	2.10E-04	2.40E-04
99%	1.80E-03	6.70E-04	5.40E-04	4.30E-04	4.80E-04
99.9%	2.70E-03	1.10E-03	1.10E-03	7.30E-04	9.70E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 25.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Bucklin Water Department, Linn County, Missouri					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	5.00E-06	3.70E-06	4.10E-06
5%	8.00E-06	1.40E-05	8.60E-06	5.00E-06	5.60E-06
10%	8.00E-06	1.80E-05	1.00E-05	5.90E-06	6.60E-06
25%	1.70E-05	2.10E-05	1.20E-05	8.10E-06	9.20E-06
50%	3.80E-05	2.70E-05	1.70E-05	1.20E-05	1.40E-05
75%	7.80E-05	4.20E-05	3.00E-05	2.20E-05	2.70E-05
90%	2.60E-04	1.20E-04	9.60E-05	9.10E-05	1.00E-04
95%	6.60E-04	2.80E-04	2.10E-04	2.00E-04	2.20E-04
99%	1.80E-03	6.60E-04	5.10E-04	4.30E-04	4.80E-04
99.9%	2.90E-03	1.20E-03	1.00E-03	7.30E-04	8.90E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 25.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Bucklin Water Department, Linn County, Missouri					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	4.90E-06	3.70E-06	4.00E-06
5%	8.00E-06	1.40E-05	8.40E-06	5.00E-06	5.50E-06
10%	8.00E-06	1.80E-05	1.00E-05	5.90E-06	6.60E-06
25%	1.70E-05	2.10E-05	1.20E-05	7.90E-06	9.10E-06
50%	3.70E-05	2.70E-05	1.70E-05	1.20E-05	1.40E-05
75%	7.30E-05	4.00E-05	2.80E-05	2.00E-05	2.50E-05
90%	2.70E-04	1.30E-04	9.70E-05	1.00E-04	1.10E-04
95%	7.10E-04	2.70E-04	2.10E-04	2.00E-04	2.20E-04
99%	1.70E-03	6.10E-04	4.60E-04	3.90E-04	4.40E-04
99.9%	2.70E-03	1.10E-03	1.10E-03	5.80E-04	1.10E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 25.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Bucklin Water Department, Linn County, Missouri					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					9.30E-06
5%					1.50E-05
10%					1.90E-05
25%					2.70E-05
50%					3.90E-05
75%					5.40E-05
90%					7.30E-05
95%					8.80E-05
99%					1.10E-04
99.9%					1.30E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 26.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Vandalia Water Treatment Plant, Vandalia, Audrain County, Missouri					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				4.80E-06	
5%				7.90E-06	
10%				1.10E-05	
25%				1.80E-05	
50%				4.60E-05	
75%				9.80E-05	
90%				1.80E-04	
95%				2.70E-04	
99%				6.30E-04	
99.9%				1.20E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 26.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Vandalia Water Treatment Plant, Vandalia, Audrain County, Missouri					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.50E-05	7.80E-06	5.40E-06	6.50E-06
5%	8.00E-06	2.10E-05	1.20E-05	9.50E-06	1.10E-05
10%	8.00E-06	2.60E-05	1.50E-05	1.30E-05	1.40E-05
25%	4.70E-05	3.80E-05	2.50E-05	2.20E-05	2.50E-05
50%	1.30E-04	6.90E-05	5.10E-05	4.80E-05	5.30E-05
75%	3.50E-04	1.40E-04	1.10E-04	9.60E-05	1.00E-04
90%	6.90E-04	2.60E-04	2.10E-04	1.80E-04	2.00E-04
95%	1.10E-03	3.90E-04	3.20E-04	2.70E-04	3.00E-04
99%	2.50E-03	8.30E-04	7.20E-04	5.50E-04	7.00E-04
99.9%	4.80E-03	1.70E-03	1.50E-03	1.00E-03	1.50E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 26.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Vandalia Water Treatment Plant, Vandalia, Audrain County, Missouri					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.70E-05	8.90E-06	6.00E-06	7.30E-06
5%	8.00E-06	2.30E-05	1.30E-05	1.10E-05	1.30E-05
10%	8.00E-06	2.80E-05	1.70E-05	1.60E-05	1.80E-05
25%	5.50E-05	4.30E-05	2.90E-05	2.70E-05	3.00E-05
50%	1.50E-04	7.50E-05	5.50E-05	5.10E-05	5.60E-05
75%	3.60E-04	1.40E-04	1.10E-04	1.00E-04	1.10E-04
90%	7.20E-04	2.60E-04	2.10E-04	1.80E-04	2.00E-04
95%	1.00E-03	3.80E-04	3.00E-04	2.50E-04	2.80E-04
99%	1.80E-03	7.00E-04	5.50E-04	4.20E-04	4.90E-04
99.9%	2.80E-03	1.20E-03	9.70E-04	6.40E-04	1.10E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 26.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Vandalia Water Treatment Plant, Vandalia, Audrain County, Missouri					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.60E-05	8.30E-06	5.80E-06	6.40E-06
5%	8.00E-06	2.20E-05	1.20E-05	9.80E-06	1.10E-05
10%	8.00E-06	2.70E-05	1.60E-05	1.40E-05	1.60E-05
25%	4.90E-05	4.00E-05	2.70E-05	2.40E-05	2.80E-05
50%	1.40E-04	7.20E-05	5.20E-05	4.90E-05	5.40E-05
75%	3.40E-04	1.30E-04	1.00E-04	9.30E-05	1.00E-04
90%	6.60E-04	2.60E-04	2.00E-04	1.80E-04	2.00E-04
95%	1.10E-03	3.80E-04	3.10E-04	2.70E-04	2.90E-04
99%	2.00E-03	7.00E-04	6.10E-04	4.50E-04	5.20E-04
99.9%	2.70E-03	1.10E-03	1.00E-03	6.90E-04	1.10E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 26.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Vandalia Water Treatment Plant, Vandalia, Audrain County, Missouri					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.50E-05
5%					2.80E-05
10%					3.70E-05
25%					5.60E-05
50%					8.30E-05
75%					1.20E-04
90%					1.60E-04
95%					2.00E-04
99%					2.50E-04
99.9%					2.80E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 27.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Sardinia Water Treatment Plant, Sardinia, Brown County, Ohio					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.90E-06	
5%				5.40E-06	
10%				6.50E-06	
25%				9.30E-06	
50%				1.60E-05	
75%				2.90E-05	
90%				6.30E-05	
95%				1.40E-04	
99%				1.20E-03	
99.9%				2.20E-03	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 27.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Sardinia Water Treatment Plant, Sardinia, Brown County, Ohio					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	5.40E-06	3.90E-06	4.20E-06
5%	8.00E-06	1.70E-05	9.00E-06	5.50E-06	6.20E-06
10%	8.00E-06	1.90E-05	1.10E-05	6.80E-06	7.60E-06
25%	2.10E-05	2.30E-05	1.40E-05	9.60E-06	1.10E-05
50%	4.80E-05	3.20E-05	2.10E-05	1.60E-05	1.90E-05
75%	1.10E-04	5.20E-05	3.70E-05	3.00E-05	3.40E-05
90%	2.20E-04	9.80E-05	7.60E-05	6.20E-05	7.10E-05
95%	5.20E-04	2.30E-04	1.90E-04	1.80E-04	1.90E-04
99%	4.70E-03	1.50E-03	1.30E-03	1.10E-03	1.20E-03
99.9%	9.30E-03	3.80E-03	3.00E-03	2.10E-03	2.60E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	99.98%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 27.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Sardinia Water Treatment Plant, Sardinia, Brown County, Ohio					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	5.70E-06	4.10E-06	4.40E-06
5%	8.00E-06	1.80E-05	9.30E-06	5.80E-06	6.50E-06
10%	8.00E-06	2.00E-05	1.10E-05	7.20E-06	8.00E-06
25%	2.20E-05	2.40E-05	1.50E-05	1.10E-05	1.20E-05
50%	5.40E-05	3.50E-05	2.30E-05	1.90E-05	2.20E-05
75%	1.30E-04	5.90E-05	4.30E-05	3.50E-05	3.90E-05
90%	2.90E-04	1.20E-04	9.30E-05	8.30E-05	9.40E-05
95%	6.80E-04	2.80E-04	2.40E-04	2.30E-04	2.50E-04
99%	4.00E-03	1.30E-03	1.00E-03	8.50E-04	9.30E-04
99.9%	6.30E-03	2.60E-03	2.40E-03	1.40E-03	1.90E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 27.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Sardinia Water Treatment Plant, Sardinia, Brown County, Ohio					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.20E-05	5.50E-06	4.00E-06	4.30E-06
5%	8.00E-06	1.70E-05	9.10E-06	5.70E-06	6.50E-06
10%	8.00E-06	1.90E-05	1.10E-05	7.00E-06	8.00E-06
25%	2.10E-05	2.40E-05	1.40E-05	1.00E-05	1.20E-05
50%	5.10E-05	3.30E-05	2.20E-05	1.70E-05	2.00E-05
75%	1.10E-04	5.30E-05	3.80E-05	3.00E-05	3.40E-05
90%	2.10E-04	9.30E-05	7.30E-05	5.90E-05	6.70E-05
95%	4.20E-04	1.90E-04	1.50E-04	1.40E-04	1.60E-04
99%	4.20E-03	1.50E-03	1.10E-03	1.00E-03	1.10E-03
99.9%	7.50E-03	3.00E-03	2.80E-03	1.80E-03	2.30E-03
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 27.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Sardinia Water Treatment Plant, Sardinia, Brown County, Ohio					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					1.20E-05
5%					2.10E-05
10%					2.60E-05
25%					3.90E-05
50%					5.80E-05
75%					8.10E-05
90%					1.10E-04
95%					1.30E-04
99%					1.70E-04
99.9%					1.90E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%

Table 28.1 Probabilistic assessment of the dose from drinking water and dietary exposure using the daily drinking water concentration

Newark Water Works, Newark, Licking County, Ohio					
Percentage	Acute Dose = Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%				3.60E-06	
5%				4.80E-06	
10%				5.60E-06	
25%				7.50E-06	
50%				1.10E-05	
75%				2.10E-05	
90%				7.50E-05	
95%				1.30E-04	
99%				3.10E-04	
99.9%				9.20E-04	
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
				100.00%	
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 28.2 Probabilistic assessment of the dose from drinking water and dietary exposure using the monthly average daily drinking water concentration

Newark Water Works, Newark, Licking County, Ohio					
Percentage	Short-Term Dose = Monthly Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	5.00E-06	3.60E-06	3.90E-06
5%	8.00E-06	1.50E-05	8.60E-06	4.90E-06	5.30E-06
10%	8.00E-06	1.80E-05	1.00E-05	5.80E-06	6.30E-06
25%	1.70E-05	2.10E-05	1.20E-05	7.70E-06	8.60E-06
50%	3.50E-05	2.70E-05	1.70E-05	1.10E-05	1.30E-05
75%	7.50E-05	4.40E-05	3.20E-05	2.50E-05	3.00E-05
90%	2.70E-04	1.10E-04	8.90E-05	8.10E-05	9.00E-05
95%	5.20E-04	2.00E-04	1.50E-04	1.40E-04	1.50E-04
99%	1.10E-03	4.00E-04	3.00E-04	2.60E-04	2.80E-04
99.9%	2.10E-03	7.40E-04	6.20E-04	4.40E-04	6.20E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 28.3 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec)

Newark Water Works, Newark, Licking County, Ohio					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Jan/Mar, Apr/Jun, Jul/Sep, Oct/Dec				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	5.00E-06	3.70E-06	4.00E-06
5%	8.00E-06	1.50E-05	9.00E-06	5.00E-06	5.50E-06
10%	8.00E-06	1.80E-05	1.00E-05	5.90E-06	6.40E-06
25%	1.70E-05	2.10E-05	1.30E-05	8.00E-06	8.90E-06
50%	3.80E-05	2.80E-05	1.80E-05	1.20E-05	1.40E-05
75%	8.50E-05	4.80E-05	3.40E-05	2.80E-05	3.30E-05
90%	2.80E-04	1.20E-04	8.90E-05	8.40E-05	9.10E-05
95%	5.20E-04	1.90E-04	1.50E-04	1.30E-04	1.40E-04
99%	1.00E-03	3.40E-04	2.90E-04	2.30E-04	2.50E-04
99.9%	1.30E-03	5.80E-04	5.60E-04	3.30E-04	4.90E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 28.4 Probabilistic assessment of the dose from drinking water and dietary exposure using the quarterly average daily drinking water concentration (Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan)

Newark Water Works, Newark, Licking County, Ohio					
Percentage	Intermediate-Term Dose = Quarterly Average Daily Dose (mg/kg-day) Quarters: Feb/Apr, May/Jul, Aug/Oct, Nov/Jan				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%	8.00E-06	1.10E-05	5.10E-06	3.70E-06	3.90E-06
5%	8.00E-06	1.50E-05	9.00E-06	5.10E-06	5.60E-06
10%	8.00E-06	1.80E-05	1.00E-05	6.00E-06	6.60E-06
25%	1.80E-05	2.20E-05	1.30E-05	8.20E-06	9.10E-06
50%	3.90E-05	2.80E-05	1.80E-05	1.20E-05	1.40E-05
75%	8.10E-05	4.60E-05	3.30E-05	2.50E-05	3.00E-05
90%	2.60E-04	1.20E-04	8.60E-05	8.30E-05	8.80E-05
95%	5.00E-04	1.90E-04	1.50E-04	1.20E-04	1.40E-04
99%	9.40E-04	3.20E-04	2.80E-04	2.10E-04	2.40E-04
99.9%	1.20E-03	5.10E-04	4.80E-04	3.20E-04	5.30E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
	100.00%	100.00%	100.00%	100.00%	100.00%
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018

Table 28.5 Probabilistic assessment of the dose from drinking water and dietary exposure using the chronic average daily drinking water concentration

Newark Water Works, Newark, Licking County, Ohio					
Percentage	Chronic Dose = Chronic Average Daily Dose (mg/kg-day)				
	Infants	Children 1 to 6	Children 7 to 12	Adults 13 to 50	General Population
1%					8.40E-06
5%					1.30E-05
10%					1.60E-05
25%					2.20E-05
50%					3.20E-05
75%					4.40E-05
90%					5.90E-05
95%					7.10E-05
99%					9.10E-05
99.9%					1.00E-04
	Percentage Below Specified RfD (mg/kg-day)				
Acute	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01	RfD=0.01
Short-Term	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Intermediate	RfD=0.013	RfD=0.0063	RfD=0.0063	RfD=0.005	RfD=0.005
Chronic	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018	RfD=0.0018
					100.00%